

# THE IRON AGE

THURSDAY, JULY 9, 1891.

## Immigration into the United States.

A report of peculiar interest just at the present time, when the immigration problem is attracting so much attention, is about to be issued by the Bureau of Statistics of the Treasury Department. The report will cover the statistics of the immigration into this country during the 70 years from 1820 to 1890. The figures by leading countries during the decade from 1881 to 1890 have been as follows: Germany, 1,452,970; Ireland, 655,482; England, 644,680; Sweden and Norway, 568,362; Italy, 307,309; Russia and Poland, 265,088; Austria-Hungary, 226,088; Scotland, 149,869; Hungary, 127,681; Denmark, 88,132; Switzerland, 81,988; China, 61,711; Netherlands, 53,701; France, 50,461; Belgium, 20,177, and all

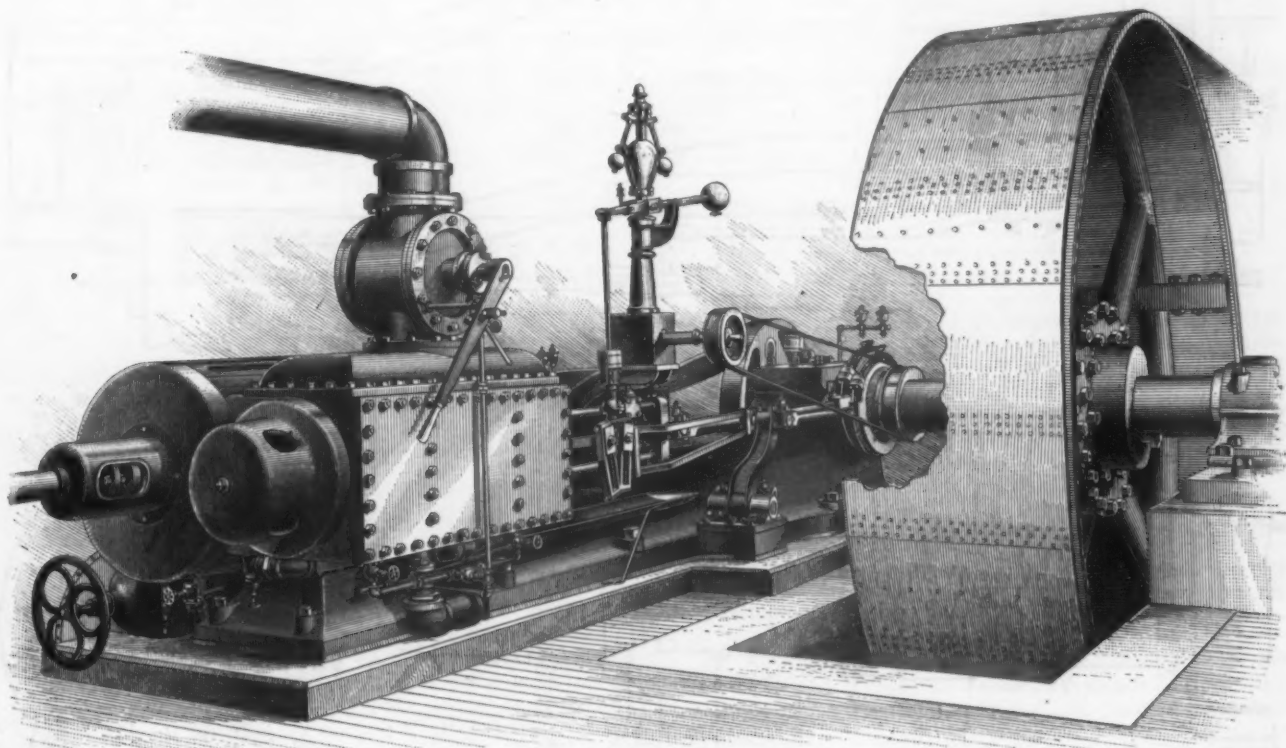
1890, and 53,350 for ten months of the present year.

Of the arrivals during the ten years from 1881 to 1890, 3,205,911, or 61.1 per cent., were males and 2,040,702, or 38.9 per cent., were females. The greatest proportion of females, 49 per cent., has come from Ireland. The smallest percentage of females has been 20.6 per cent. from Italy and 26.2 per cent. from Hungary. The ages of immigrants arriving during the past ten years show that from 62.2 per cent. in the case of Germany to 78.5 per cent. in the case of Ireland are between 15 and 40 years of age. Of those under 15 the largest percentage, 86.6, came from Germany, and the smallest percentage, 14.1, from Ireland. The smallest percentage of those over 40 years of age, 7.3 per cent., also came from Ireland, and the largest

## The Neuert Automatic Steam Engine.

The accompanying illustrations show the principal characteristics of the Neuert patent automatic cut-off high-pressure engine, built by the Kilby Mfg. Company of Cleveland for the Baackes Wire-Nail Mfg. Company of the same city, and whose works are illustrated and described elsewhere in this issue. The cylinder is 30 inches in diameter and the stroke is 36 inches.

The valves, Figs. 4 and 5, are of the piston type, with multiple ports; the cut-off valves, which are two in number, are located inside of the main valve, as shown in the drawing. The main valve is driven from an eccentric on the main shaft, Figs. 1 and 2, in the usual way, while the cut-off valves receive their motion from



THE NEUERT AUTOMATIC STEAM ENGINE.

other countries, 492,964. The leading countries from which arrivals have fallen off during the past ten years are France and China, the total immigration from France from 1871 to 1880 having been 73,301, and from 1881 to 1890, 51,420. The immigration from China amounted to 122,436 from 1871 to 1880, and to 51,469 during the years 1881 and 1882, after which the Chinese Exclusion act went into effect, and the arrivals have been very small. The year of the largest immigration yet reported was that ending June 30, 1882, when the arrivals were 788,992. The immigration from Italy to the United States was 15,401 for the fiscal year 1881, and has steadily increased until 1890, when it was 52,003, and the present year, ending June 30, 1891, when the total for ten months has reached 51,153, as against 34,310 for the corresponding months of 1890. The immigration from Hungary amounted in 1880 to 6826, and during 1890 to 22,062. The figures for ten months of the present year have reached 22,496. The immigration from Russia and Poland also shows a rapid increase, from 10,635 in 1881 to 46,671 in

percentage, 15.5 per cent., came from Italy. The classification of the character of the immigration during the past decade shows that only 25,257 males were of the professional classes, 514,552 were skilled laborers, 1,833,325 were of miscellaneous occupations, 73,327 made no statement in regard to occupation and 759,450 were without occupations. Of the 2,040,702 females, 1,724,454 were reported as without occupation.

All the shipbuilding yards in Russia are engaged in the construction of iron clads and monitors. At the Baltic Works the immense cruiser Rurik, of 10,000 tons capacity, and capable of steaming 20 knots an hour, is being built, and at the Franco-Russian Works an iron clad, the Navarino, of 9476 tons capacity, is on the stocks. Another iron clad is being built at the new Admiralty Wharf in St. Petersburg. At the Nevsky Works an iron corvette and a large ice breaker are on the stocks, while at the Pvoiteloff Works two seagoing monitors are under construction. In all, 22 ships of war are in course of construction.

a second eccentric on the main shaft. At a proper distance from the shaft is located a rocker arm, which is connected with the cut-off eccentric by a short rod and wrist. On the opposite end of this wrist is connected the link rod or frame, to the other end of which is fastened a double link, Fig 6, the rock arm forming the fulcrum for the link rod. The double link has two slots standing obliquely to one another, thus forming a double wedge, in whose slots are fitted steel sliding blocks, which are pivoted to the wrist pins of the valve rods, one of them being a hollow tube and the other one a steel rod passing through the hollow tube, each being connected with one of the cut-off valves. The link is acted upon by a fly-ball governor, which raises and lowers the same by its centrifugal force, thus forcing the valves together and apart as the load and speed of the engine may require, and so regulating the speed of the engine and cut-off of the steam.

The bed or frame is of the Tangye type. The bed wheel is 18 feet in diameter with a width of face of 4 feet, weighing

25 tons. The shaft is forged wrought iron 17 inches in diameter in the main journal, 15 inches in the body, and has a boss of 18 inches for the hub of the wheel. The speed of this engine is 100 revolutions or 600 feet of piston travel per minute and it is furnishing the power for the wire mill of the above named establishment. This machine is a very quick and perfect regulator under all variations of its load and is economical in the use of steam. The Kilby Mfg. Company have built a number of these engines, furnishing power for rolling mills, electric-light plants, mills and factories, &c., all of which are giving good results. Since the above engine has been in operation its owners have placed an order for two more

ment to furnish eight carriages at \$11,500, with a condition that if the order is increased within a year to 25 carriages the additional 17 are to be furnished at \$10,750 each.

#### Organization of a Torpedo Service.

A permanent Torpedo Board is about to be organized under authority of the Navy Department. The president of the board will be Commander George A. Converse, now of the United States steamer Enterprise. The board will consist of three members. It will not only be permanent, but will be independent of all Navy Department bureaus. The president of the

over the second 400 yards of run. The lateral deviation on any point of the 800-yard course must not exceed 10 feet. The vertical deviation must not exceed 2 feet. The Torpedo Board will conduct all trials and tests at Newport. Fifty Howell automobile torpedoes have been ordered by the Navy Department. They are being constructed at Providence, R. I. The first of the lot will be ready for examination by August 1. The Howell torpedoes must have a speed of 31 knots over the first 400 yards of run. Among the tests will be an exhaustive one of the Hall torpedo. This weapon will be tried in conjunction with the Howell torpedo.

The Ericsson submarine torpedo boat Destroyer will also be tested by the board.

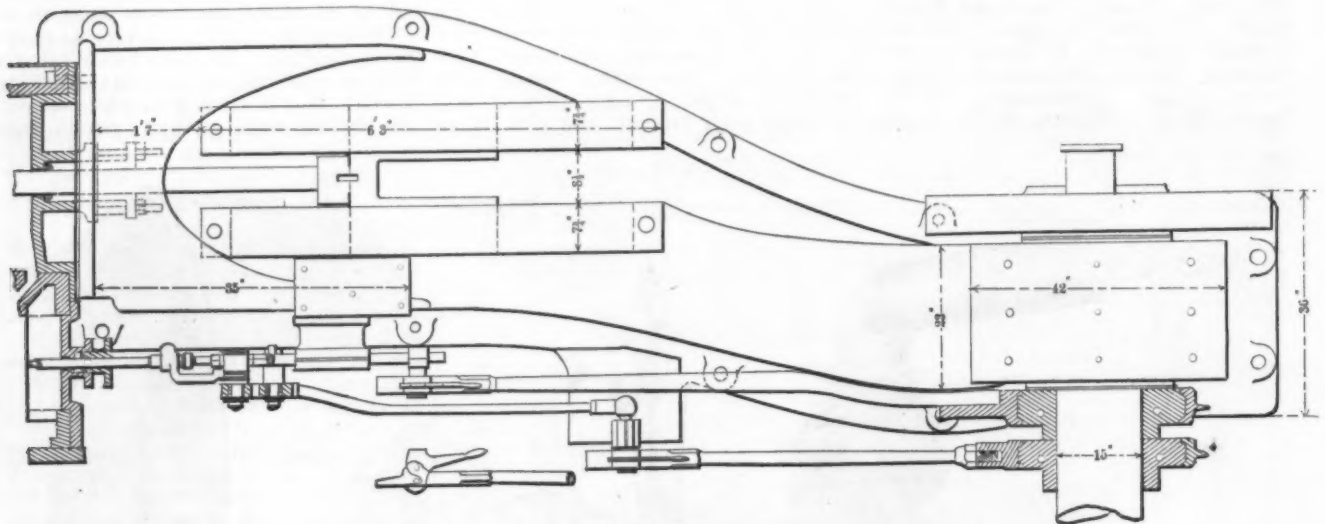


Fig. 2.—Plan.

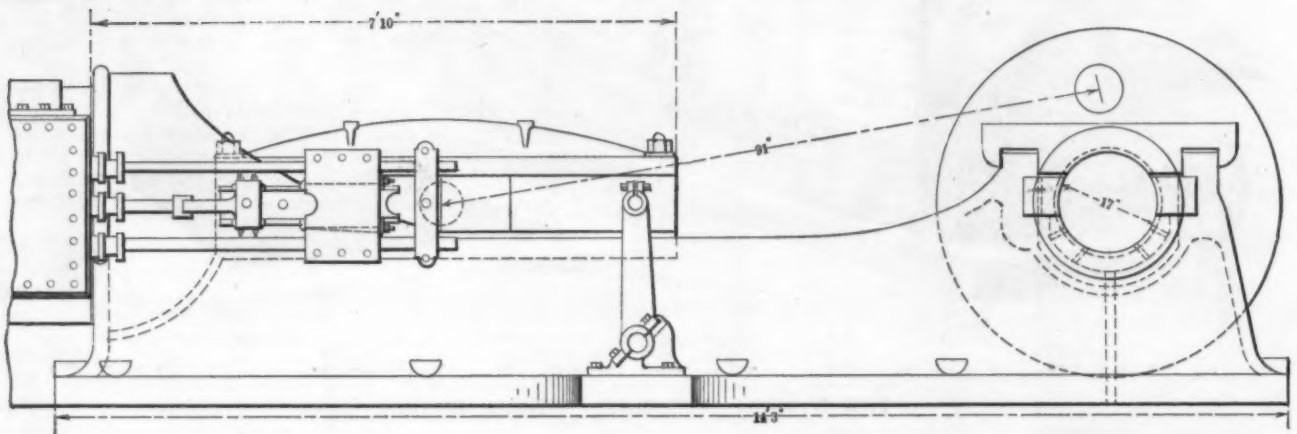


Fig. 3.—Side Elevation.

#### THE NEUERT AUTOMATIC STEAM ENGINE.

38-inch diameter by 4 feet stroke with the Kilby Company, who have them now under construction.

#### Carriages for the 12-inch Mortars.

—A Washington dispatch states that the Ordnance Department of the Army has at last succeeded in making a contract for the construction in this country of the Eastern and Anderson spring return carriages for the 12-inch breech-loading rifled mortars intended for harbor defense. This carriage is of the Russian type, the recoil being taken up by disked steel springs and hydraulic cylinders, and has given satisfaction during the tests at Sandy Hook. The Builders' Iron Works, at Providence, R. I., have secured the American rights of the patentees, and have entered into contract with the War Department

will receive orders direct from the Secretary of the Navy. It is proposed to commence the building of torpedoes and torpedo boats on an extended scale. One hundred Whitehead torpedoes have been ordered as a starter from the English Whitehead establishment. This order amounts to something like half a million of dollars. The order has been made through representatives of the Whitehead establishment having headquarters in Brooklyn.

The 100 Whiteheads are to be delivered before next fall. They will be distributed on receipt among the various new ships of the navy. The contract calls for a higher grade of torpedo than is being furnished to British war ships. Each torpedo, in order to be accepted, must have a speed of 31 knots per hour over the first 400 yards of run, and a speed of 29 knots per hour

The Destroyer will be ready for trial by August 1. A new steel torpedo defense net will be submitted to the board for test. It is claimed for the new net that it possesses less weight and is more flexible than the nets in operation abroad. The steel net to be tried is the manufacture of a Pittsburgh establishment. It is wholly American in design. For service it will be rigged out from the sides of a battle ship by means of light steel booms, and when not in use stowed along the outer side of the hull after the usual manner.

It is thought that the Howell torpedoes, which are American in design and make, will show an efficiency greater than the English Whitehead. The coming tests will demonstrate the relative efficiency of the two weapons. In general features the Whitehead and Howell torpedoes are similar. Both are discharged from launching



tubes fitted in the hulls of ships. These tubes are either placed in broadside or in the stern or stem. Both the Whitehead and Howell are automobile, their propelling power coming from engines set in the body of the torpedo. The engines work twin screws. The torpedoes are hurled out of the launching tubes by a small powder discharge operating against compressed air. The torpedoes leap into the water some 15 feet away from the ship, dive, and take a course parallel to the surface of the water and in the direction in which they have been aimed. The machinery of the torpedoes is set in motion before the discharge. The depth of the torpedo below the surface of the water is regulated by

mechanism. The torpedo having the greatest speed, least error of lateral and vertical deviation, least weight and greatest certainty of action will be the type selected by the Torpedo Board for the use of the new navy.

#### American-Chilian Trade.

Consul McCreery of Valparaiso, who has given a considerable portion of his time during the past 12 months to the study of our trade with Chili, is of the opinion that in Chili the United States has a valuable market for many of its

There was an increase in imports from the United States in 1889 of 22.62 per cent. In the five years 1885-89 the value of the imports and exports were as follows:

	Imports.	Exports.
1885.....	\$2,721,205	\$1,626,773
1886.....	2,623,172	2,649,806
1887.....	3,242,314	2,611,384
1888.....	3,133,173	2,070,694
1889.....	3,842,078	3,781,411

The total value of the imports from the United States in 46 years (1844-89) is given at \$91,674,630. The value of the exports to the United States in the same period is given at \$86,474,262.

#### National Tube Works

A Boston newspaper reports that the National Tube Works Company of East Boston will re-incorporate under the laws of New Jersey with \$11,500,000 capital, of which half will be 7 per cent. preferred stock, and upon the other half it is calculated 8 to 10 per cent. dividends can be easily paid. The present capital is \$3,000,000, the surplus about \$5,000,000 and the last price of the stock 260, against 145 a year ago.

Present stockholders will get for each share held one and one-half shares of new preferred and one and one-half shares of new common. Of the remaining capital stock, about \$200,000 will remain in the treasury and may be used to establish a coke plant, if the directors so decide; \$1,100,000 will be used to take up the \$1,000,000 stock of the Monongahela Furnace Company, who were incorporated last year to supply the tube works with pig iron; \$1,050,000 to take up at 175 the \$600,000 stock of the Republic Iron Works, which have earned a surplus of nearly 100 per cent., while paying 12 per cent. dividends, supplying iron to the tube works, and \$165,000 to take up at 110 \$150,000 capital of the Boston Iron and Steel Company.

These three Pennsylvania companies have all been established by the National Tube Works stockholders, and will now be merged with them upon the basis reached by a committee of appraisal valuing the plant, surplus and earnings of each company.

A New Jersey charter was selected because of provisions under laws of that State permitting the issue of preferred stock. Stockholders have been getting 3 per cent. quarterly, or \$12 per annum, besides rights to new stock and subscription privileges to sub-companies. The new dividend requirements will be \$862,500, provided only 8 per cent. is paid upon the common.

The parent company alone have made average net earnings the past five years of \$1,000,000 to \$1,200,000 per annum. The National Tube Works were started at East Boston in 1869 and shortly after moved to Pennsylvania, although continuing to be owned mostly in Boston. They are now the largest concern in the world manufacturing wrought iron tubes, their annual output being \$15,000,000.

#### Iron Chimneys.

Iron chimneys of somewhat unusual design are now built in all sizes by the Philadelphia Engineering Works (Limited) of Philadelphia. The casing of the chimney is made of plate iron, strongly riveted, and thus forming a continuous shell from the ground to the top. At the bottom it is riveted to a heavy cast-iron foundation plate ring, secured to the foundation by bolts passing through it to a second plate ring, built solidly in the bottom of the foundation. At the top is a plate iron ornamental casing. Fastened to the shell

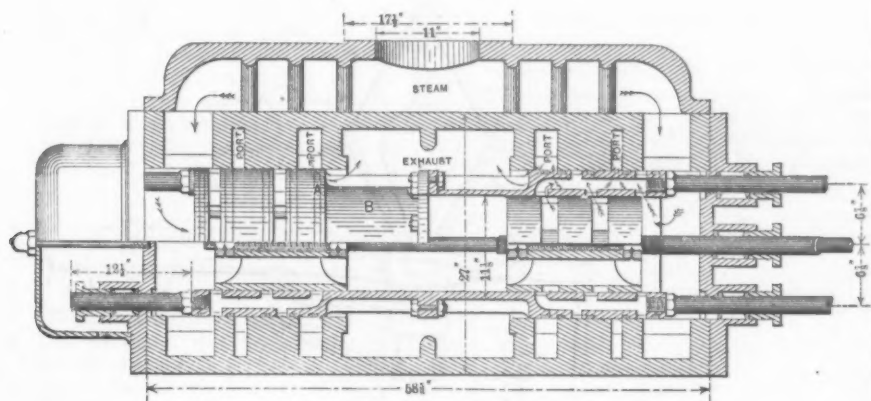


Fig. 4.—Vertical Section through Valves.

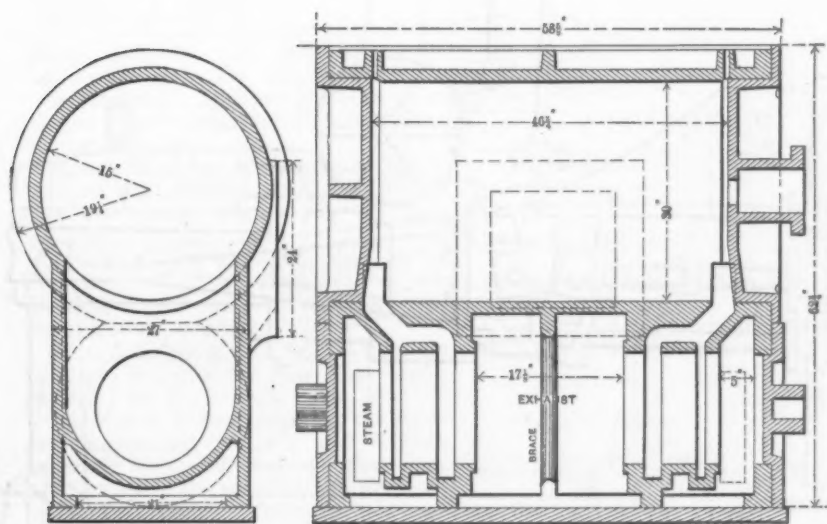


Fig. 5.—Cross Section and Sectional Plan through Cylinder.

#### THE NEUERT AUTOMATIC STEAM ENGINE.

valves, which respond, closing or opening, to varying depth pressures.

Ordinarily the torpedoes run on a course 15 feet to 17 feet below the surface. This depth brings the torpedo against the under-water hull of the enemy's vessel. The torpedo explodes on concussion. The general shape of the Whitehead and Howell is that of a cigar. The diameters are as great as 18 inches and length 18 feet. Smaller sizes are employed. The explosive charge is carried in the forward end of the torpedo. It consists in the larger torpedoes of several hundred pounds of gun-cotton. The effect of a torpedo exploding against the under-water hull of a vessel, and particularly when there is a weight of 15 feet of water for tamping, is to bodily lift the largest ship afloat. No hull built can withstand the shock. The Whitehead and Howell torpedoes differ only in internal

productions, but that our business methods require considerable revision. He points out that it is "a great mistake to suppose that the manufactures of the United States are ignored, overlooked or neglected in this country. There are in Valparaiso alone at least 20 respectable importing houses who are well acquainted with United States manufactures and fully alive to all the improvements that take place in them, and they are ever on the lookout to introduce such new articles as their practical experience suggests may be adapted to the requirements of this country. It is an error to suppose that the commercial traveler in flying visits at long intervals of time can accomplish more for American manufactures than long-established firms who are thoroughly acquainted with the country and its requirements."

of the larger chimneys is a wrought-iron ladder extending to the top. The chimneys are built with or without fire-brick lining, depending upon the temperature of the escaping gases.

The chimneys are self-sustaining, requiring no guy rods or other fastenings. Their weight, in most cases, is sufficient to withstand overturning by ordinary wind pressure, but when bolted to a foundation of brick or stone will resist the highest wind pressures.

#### Natural Gas for Chicago.

The president and attorneys of the Columbus Construction Company take a favorable view of the recent decision of the Indiana Supreme Court touching the piping of natural gas to Chicago. The dispatches printed on the subject have been misleading, it seems, and in favor of instead of against giving Chicago natural gas.

"The decision," said President Hequem-bourg, of the Construction Company, "will not be in the way of taking the gas out of Indiana, but is an assurance that the material will be brought to this city just as soon as the piping can be done. The decision simply declares the Indiana law valid wherein it limits the pressure on the pipes to 300 pounds to the square inch, and goes on to explicitly declare that this pressure can be maintained by artificial means. The action was brought, it must be understood, to prohibit the pumping, but the court holds that the natural pressure (300 pounds to the square inch) can be kept up; hence the decision is really a victory for the natural gas people. It defines the law very plainly, and declares that where the pressure falls short of 300 pounds artificial means can be used to increase it, which is all the Construction Company ask."

"There is nothing in the decision of a prohibitory character; in fact, all there is to it of local interest brings on the pressure question, and this is in favor of Chicago. The pumping, which the opponents sought to prevent, is clearly allowable, and you can safely say that natural gas will be here just as soon as the piping can be done. In fact, the court was practically unanimous on this point—three of the judges holding that the piping of gas out of the State could not be interfered with unless the 300-pound pressure was exceeded."

"Judge Olds dissented, and filed an opinion, but he went so far as to assail the State law which it was sought to test, and to hold that it was clearly invalid in that it might be construed as an attempt at interference with interstate commerce. The bringing of the gas to Chicago," Mr. Hequem-bourg concluded, "will cost a little more than was first estimated, but it will be brought here just the same. The laying of the pipes will proceed at once, and no further delay of any kind is anticipated."

At Anderson, Ind., on the 18th ult., the Columbus Construction Company filed for record a conveyance transferring to them all the leases formerly owned by the Indiana Natural Gas and Oil Company. These leases cover 452 farms in Grant, Howard, Pulaski, Jay and Madison counties. The Columbus Construction Company are now engaged in laying a pipe line to convey natural gas to Chicago. The gas leases were originally secured by two Pennsylvania men and turned over to the company who subsequently assigned to the Construction Company.

Tri-State Can Company, Baltimore, Md., advise us that their factory at Keokuk, Iowa, which was burned down in January, has been rebuilt and fitted with new machinery, and manufacturing was resumed last week. Fortunately, at the time of the

fire the company had a considerable stock of Cans stored outside of the factory, so that none of their customers, we are advised, have suffered any inconvenience.

#### The Virginia Investment Association.

In March, 1889, the Virginia Syndicate was formed in London for the purchase of coal, timber and iron lands, town sites and interests in land companies contiguous to the main line and branches of the Norfolk and Western Railroad Company in Virginia, West Virginia and adjacent States.

syndicate, 60 per cent. having been paid in on the certificates. Subsequently, on July 15, 1890, the balance of 40 per cent. was called and paid in on the preferred shares, and the certificates were stamped full paid.

The policy of the board of directors, which consists of Jos. I. Doran, of Philadelphia, chairman; Jno. H. Dingee, secretary and treasurer; Sabin W. Colton, Jr., of Philadelphia; A. J. Mayo of Tazewell Court House, Va.; A. A. H. Boissevain of Blake, Boissevain & Co., London, and Everett Gray of Vivian, Gray & Co., London, has been to invest in land companies

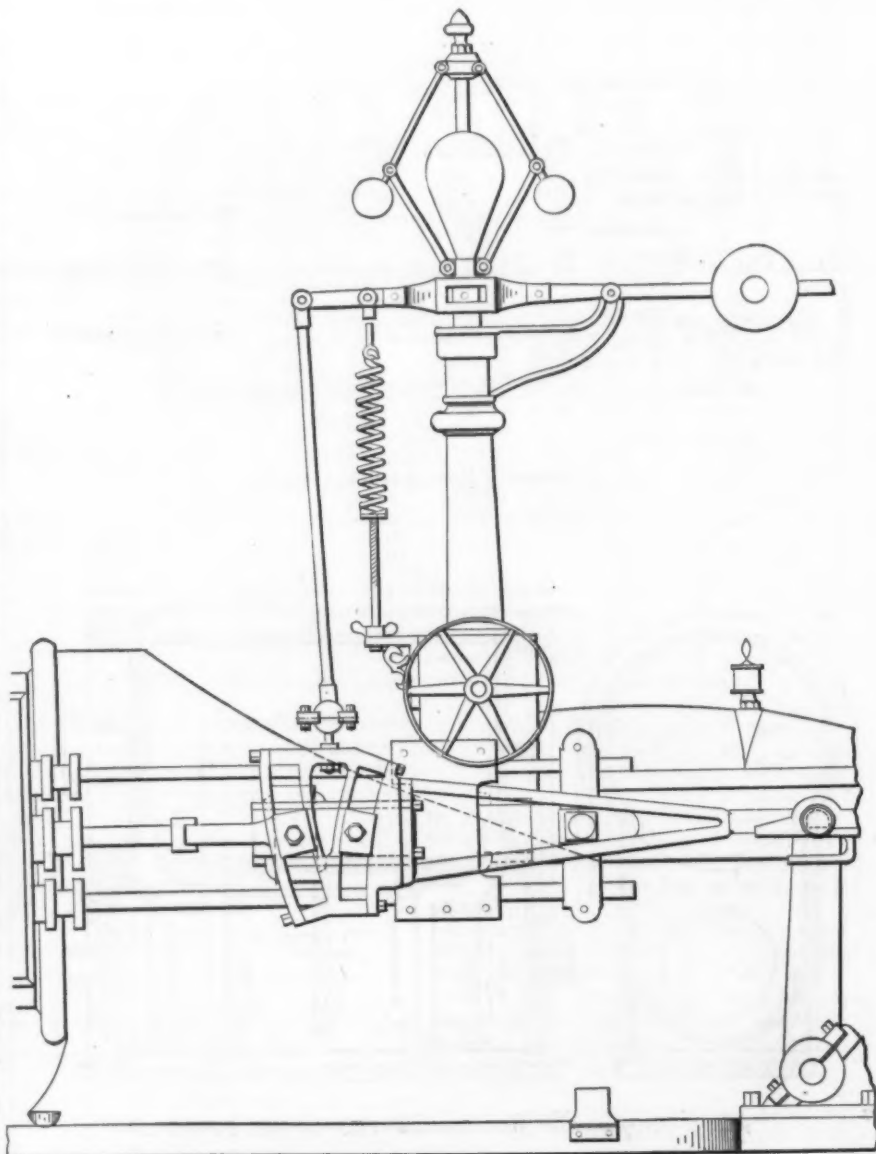


Fig. 6.—Valve Gear.

#### THE NEUERT AUTOMATIC STEAM ENGINE.

To this syndicate subscriptions to the amount of \$1,000,000 were secured, and during the succeeding months of the year 1889 a large part of this sum was invested in the manner proposed in the prospectus of the syndicate.

On June 24 of the same year the Virginia Investment Association was organized with a capital of \$3,000,000, represented by \$1,000,000 cumulative 6 per cent. preferred shares and \$2,000,000 common shares. To this association, on December 31, 1889, all the assets of the Virginia syndicate were transferred and the association went into operation. The shares of the association were issued under date of January 1, 1890, in exchange for certificates of participation in the Virginia

and in coal, timber and iron lands. The company have invested an aggregate of \$171,500 in iron furnace stocks and bonds, including the Roanoke, Buena Vista, Shenandoah, Pulaski, Max Meadows, Bristol and Graham; have placed \$63,884.29 in iron mining companies, the Virginia Mining Company, the Doe Mountain Mining and Improvement Company, and the Sigua Iron Company of Cuba.

They have placed \$177,251.29 in coal and timber lands, which includes a three-sevenths interest in the Kewee Creek Flat Top Coal Company, Beech Creek timber lands, Stuart wood lands and Kountze lands, Wayne County coal lands, Guyandot Coal Land Association and Monongah Coal and Coke Company. The largest



sum, however, was placed in land and improvement stocks, the total being \$431,982.35, the concerns participated in being the Suffolk, Crewe, West Lynchburg, Mountain View, Buena Vista, Radford, West Radford, Pulaski, Max Meadows, Norton, Cleveland, Doran, Graham, Bluefield, Ceredo and Ironton. In addition to this the company have a \$33,201.92 interest in town and city lots, \$54,294.03 in land for town site purposes, \$32,350 in houses and stores, and \$183,500 in stocks and bonds of other companies. On the total investment of \$1,147,963.88, \$834,043.48 has been paid. The total income was \$96,368.38, which includes \$23,345 for dividends, interest and rents, \$14,700 for stock dividends and \$58,323.38 profit on the sale of shares and real estate. The expenditures were \$54,449.54, including \$47,000 dividend on preferred shares, of which the issue is \$1,000,000 6 per cent. cumulative. The valuation of the property for which the company paid \$834,043.48 is \$1,206,003.66. The liabilities are \$70,423.39, exclusive of stock and profit and loss account.

### Two Government Cranes.

Bids were opened in the Bureau of Yards and Docks in the Navy Department last week for the two 40-ton traveling cranes that are to be erected at the New York and Norfolk navy yards for handling heavy armor plates and placing them in position on the sides and turrets of ships. The bids were as follows:

Yale & Towne Mfg. Company of Stamford, Conn., for both cranes, \$92,200; for the New York crane, \$47,100; for the Norfolk crane, \$47,400.

Morgan Engineering Company of Alliance, Ohio, for both, \$79,966 25; for either crane separately, \$45,093.75.

Southwark Foundry and Machine Company of Philadelphia, for both, \$71,522; for one, \$37,036.

Weimer Machine Works Company of Lebanon, Pa., for both, \$104,300; for the New York crane, \$52,500; for the Norfolk crane, \$53,000.

American Ship Windlass Company of Providence, R. I., for both, \$77,708; for the New York crane, \$38,579; for the Norfolk crane, \$39,189.

William Sellers & Co., Philadelphia, for both, \$55,465; for the New York crane, \$28,960; for the Norfolk crane, \$29,000.

The Yale & Towne Company, the Morgan Engineering Company and William Sellers & Co. each bid on their own modification of the specifications prepared by the Department. The other bids were all on the Department specifications. It is probable that the contract will be awarded to Sellers & Co., although no action will be taken until the modifications of the specifications have been carefully examined.

### The Hall Gas Process.

Remarkable claims are made by the Chicago Smokeless Fuel Gas Company for the gas generator invented by Thurston G. Hall, which they control. This generator manufactures gas from cheap slack coal, into which crude Lima oil is sprayed with a steam jet. As described by the inventor, a smoldering fire only is maintained, and the mixture of smoke, oil and steam is forced by a fan into a chamber filled with what he termed "electrodes," which generate electricity at a temperature of 600° and upward. The inventor claims that the electricity decomposes the steam, oil and smoke, from which a fixed gas results. The company claim to be able to produce more than 1,000,000 feet of gas from 1 ton of coal at a cost of not over 2½ cents per 1000 feet.

They have contracted to furnish a gas company at Waukegan, Ill., with illuminating gas at 15 cents per 1000. Fuel gas is generated by using a less quantity of oil. The company have been conducting their experiments at the old factory of the Kelley Barb Wire Company in the northwestern part of the city, which has been visited daily by persons interested in gas making, among whom, however, there is a great deal of skepticism as to the value of the process. It is proposed to erect small stations in different parts of Chicago to furnish gas for heat and power. Dr. E. L. McAuliffe is president of the company, T. G. Hall general manager, S. D. Maddin assistant manager and L. E. Dancey secretary.

### Testing Railroad Materials.

A committee of the Master Mechanics' Association, in a report on testing laboratories, gives the following interesting data on the work of the laboratories of the Chicago, Milwaukee and St. Paul and the Baltimore and Ohio railroads:

Summaries of Tests in Laboratories of Chicago, Milwaukee & St. Paul.—Physical.

Materials.	1888.	1889.	1890.		Cost of tests.
	Per cent. rejected.	Per cent. rejected.	Amount received.	Per cent. rejected.	
Axles.....	2½	6	5,927 axles	5.3	68c. per 100.
Angle bars.....	4				
Bar iron.....	2 2-5	4	4,772 tons	3 9	11.2c. per ton.
Boiler tubes.....	17	8 1-5	6,991 tubes	7.2	16.4c. per 100.
Chain.....	00	4	59 tons	3.7	10c. per ton.
Links and pins.....	3	30	722 tons	9.8	6c. per ton.
Springs—helical.....	2½	00	20,573 springs	15.2	40c. per 100.
Springs—elliptic.....	14	7	1,839 springs	0.6	\$1.50 per 100
Steel plate.....	4	3	956 plates	7.2	23.4 each.
Track bolts.....	00	00	5,053 kegs	3.8	92c. per 100 kegs.
Track spikes.....	00	00	14,235 kegs	15.5	16c. per 100 kegs.
Wire—barbed fence.....	10	14	6,388 reels	00	8c. per 100 reels.
Turnbuckles.....			1,260 pieces	00	1c. per 100.
Taps, dies and reamers.....			384 pieces	5	\$3 per 100.

Summary of Physical Tests, Laboratory Baltimore and Ohio Railroad, Fiscal Year 1889-90.

Materials.	No. of tests.	Quantity represented.	Accepted.	Rejected.
Axles, steel.....	104	3,856	3,257	599
Boiler, steel.....	1,089	807,352 pounds.	771,051	36,301 pounds.
Cast iron.....	126	{ General foundry use. }		
Cast-iron wheels, 33 inches....	806	40,522	39,591	941
Cast-iron wheels, 31 inches....	71	3,032	3,117	5
Cast-iron wheels, 30 inches....	8	488	488	
Cast-iron wheels, 28 inches....	2	101	101	
Cast-iron wheels, 26 inches....	9	531	526	5
Cast-iron wheels, 24 inches....	4	205	205	
Chain.....	476	214,114 pounds.	175,513 pounds.	38,601 pounds.
Coupling links.....	33	3,750	3,750	
Steel forgings, crank pins, parallel rods, &c.....	47	95,378 pounds.	93,678 pounds.	1,700 pounds.
Springs, helical.....	1,071	16,350	15,281	1,069 pounds.
Springs, elliptic.....	762	762	756	6
Springs, engine.....	1,675	1,675	1,657	18
Stay bolt iron.....	70	69,727	60,042	9,685
Splice bars.....	56	74,795 pairs.	74,795 pairs.	
Tire steel.....	192	548,268 pounds.	539,748 pounds.	8,520 pounds.
Wrought iron, merchant bar.....	2,332	7,660,508 pounds.	5,194,313 pounds.	2,466,195 pounds.
Wrought iron, merchant bar, accepted without test account of urgency.....			5,194,343	180,578 pounds.

It will be noted that the first table gives the cost of testing.

The United States Association of Charcoal Iron Workers has received an invitation from Toronto to hold its meeting at that point between September 8 and 19. As a general outline of the proposed trip,

it is suggested that the party assemble at Niagara Falls, proceed to Toronto, visit the iron ore district northeast of that city, go to Kingston and the Thousand Islands, and return via Lake Ontario via Lake Champlain. The meeting will be held if a sufficient number of participants is obtained.

It is the intention of the management to make the Chicago World's Fair site and the buildings one grand exemplification of the progress that has been made in electricity. The electrical exhibits will not be confined to a few of the buildings, but on every hand there will be a display of electricity. The grounds, including the water ways, the wooded island, the streets and avenues and boulevards approaching the World's Fair site, will all be lighted by electricity and in harmony with the general effect which it is desired to produce. According to Chairman Jeffery of the Committee on Grounds and Buildings, the great structures of the exposition will be turned into a panoramic view at night by the aid of powerful electric search

lights. On the gilded dome of the Administration Building, on the center pavilion of the Casino, and at other suitable points these search lights will be placed. During the evenings on which the exposition is open, the lights will be turned on the several main buildings and waterways so as to flood them with a sudden burst of electric splendor.

### The Baackes Wire-Nail Company.

The latest important acquisition to the ranks of wire-nail manufacturers is the Baackes Wire-Nail Company of Cleveland, Ohio, whose works were put in active operation early in the present year. This plant is peculiar in many respects, the builder, M. Baackes, having had free opportunity to embody in it the results of years of observation and practical experience. The arrangement of the buildings, the style of their construction, the motive power and the nail machines themselves all bear evidences of the thoroughness with which Mr. Baackes has studied the details of his business and the ability with which he has put his views into shape. The works occupy a site of 20 acres, lying between Lake Erie on the north and the Lake Shore Railroad on the south. Jetties have been built into the lake, and additional ground is rapidly being made by the action of the lake itself. A ground plan, Fig. 1, is herewith presented of the plant as it stood the past spring. It then embraced a wire-drawing mill, nail factory and auxiliary buildings for cleaning, motive power, &c. Ground has since been broken for a rod mill, which is to be pushed to completion as rapidly as possible. The plans of the company contemplate steel works and blast furnaces, their location on the lake front having been made with a view to the receipt of raw materials by water as far as practicable. It will be observed by the ground plan that the tracks in the yard have been carefully adapted to the handling of raw materials on one side of the works and the shipment of the finished product on the other. There is a continuous movement forward of the materials used until they reach the shipping room, where six cars can be loaded at one time from a floor on the same level as the floor of a freight car.

The cleaning house, at which the wire rods are unloaded from the cars, is 121 feet 6 inches long by 79 feet 4 inches wide, divided into two compartments, one of which is used for annealing. In the cleaning compartment are 18 tanks arranged in a circular pit, with a swinging crane in the center to handle the coils of rods in and out. The pit has room for 18 tanks and can clean 200 tons of rods daily if required. From the annealing furnaces the rods pass to the wire mill, which is a brick structure, 300 feet long by 75 wide, and most substantially built. The plan followed in the erection of this building is shown by the accompanying sketches, Figs. 2 and 3.

The wire mill has a lantern extending its full length, with windows on both sides, so that the building is lighted from the sides and top, after the general factory style. This mill draws 150 tons of wire daily and contains 63 blocks, which are arranged in two rows down the center of the building, with an aisle between them sufficiently roomy to enable easy access to be had to any part of the machinery either for oiling or repairing. The arrangement is such as to avoid all danger to the oiler or repairer, as well as interference with the workmen, who are thus on the other side of the blocks, where they have an abundance of room for their reels. The shaft from which the blocks are operated is under the floor, passing down the center of the aisle above referred to. It is a very heavy shaft, running down from 10 inches to 7 in diameter. Mr. Baackes believes in powerful machinery as a safeguard against frequent breakdowns and expensive repairs. The arrangement of the blocks in the building is shown in the accompanying diagram, Fig. 4.

The wire-nail factory is built upon the shed or saw tooth roof plan, which has not yet been very widely adopted in this

country, but appears to have such advantages in furnishing light to the interior of a wide building that it must become popular when it is better known. The por-

sun. An illustration of the roof and some details is given in Fig. 5.

The nail factory is a large brick structure 400 feet long by 80 feet wide, contain-

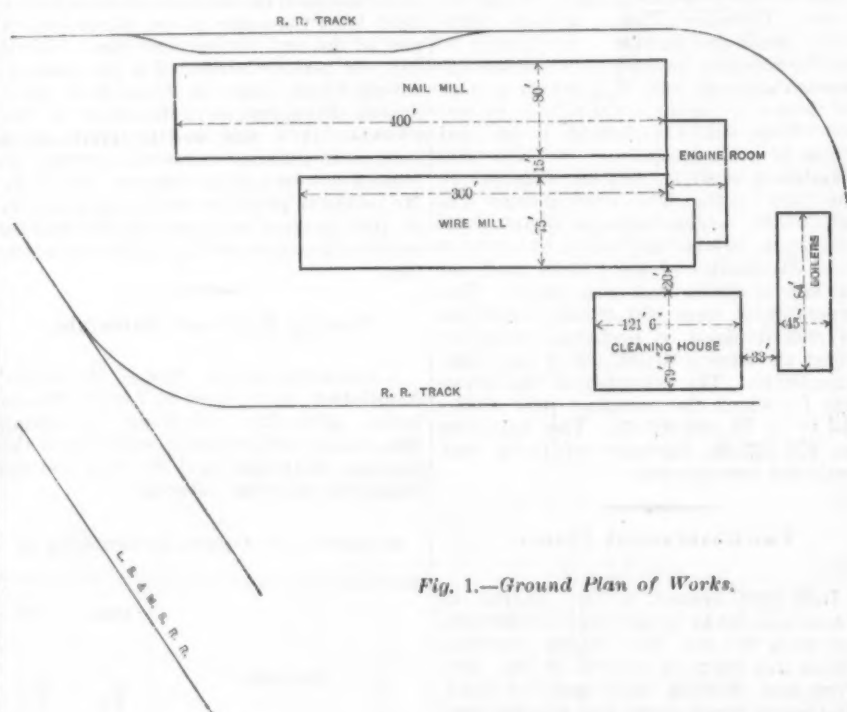


Fig. 1.—Ground Plan of Works.

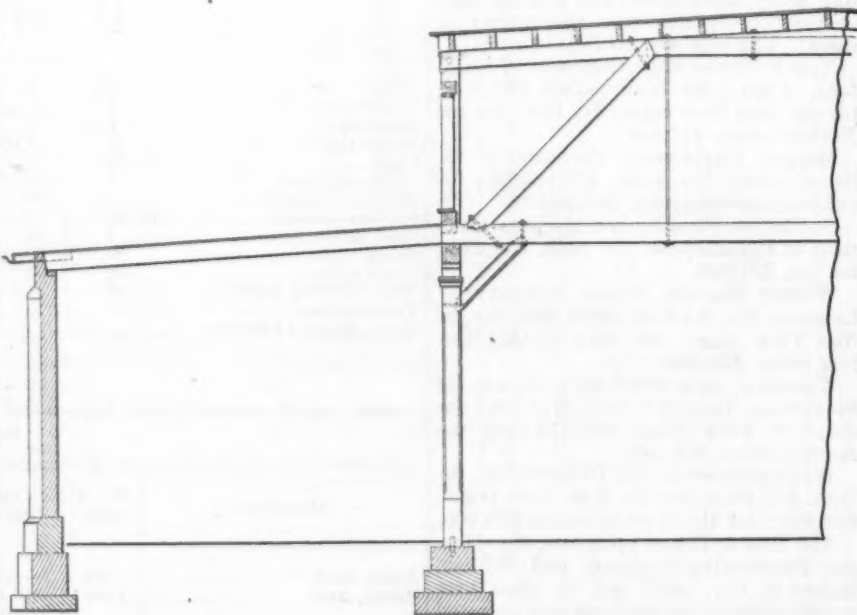


Fig. 2.—Half Cross Sectional Elevation of Wire Mill.

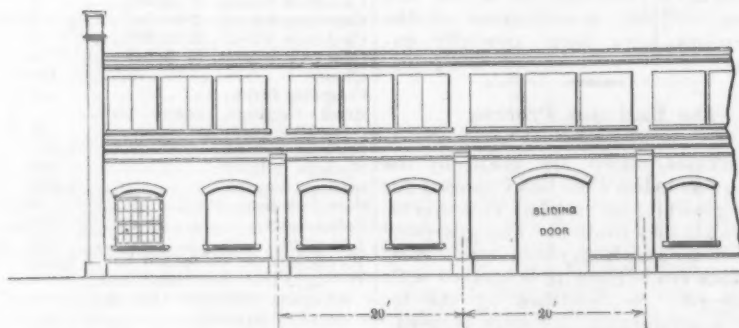


Fig. 3.—Part Side Elevation.

### THE BAACKES WIRE-NAIL WORKS.

tions of the roof nearly vertical are almost wholly constructed of glass, and as they face the north they admit a flood of light, which penetrates every nook and corner of the building, but with no glare from the

ing at present 100 machines, but built to accommodate 200 machines. On entering this building the visitor is impressed not only by its remarkable light, but by the very noticeable freedom from noise, al-



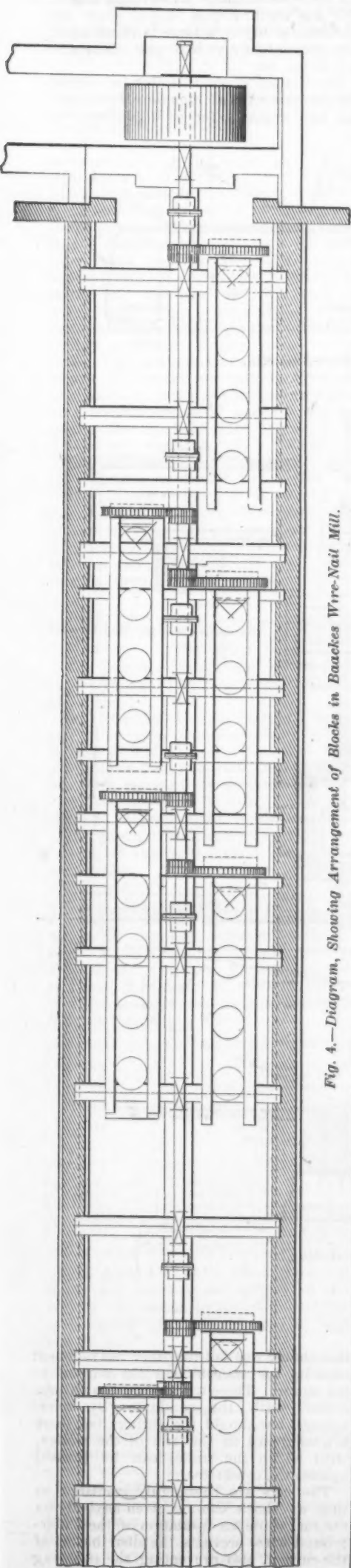


Fig. 4.—Diagram, Showing Arrangement of Blocks in Baackes Wire-Nail Mill.

though all the nail machines may be running at their highest rate of speed. The deafening din of the ordinary wire-nail factory is altogether missing, and in place of it there is merely such a noise as might be expected from a great deal of machinery in motion, but not great enough to interfere with conversation. The machines were built by the Kilby Mfg. Company of Cleveland, from designs invented by Mr. Baackes, and not only do comparatively noiseless work, but are remarkably rapid, surpassing in product the old type of machine. Mr. Baackes believes that with less noise there is less repairing, and he is undoubtedly right. Even the large spike machines have been tamed by him and taught how to moderate their racket. A double line of shafting runs through this building, supplying power to a double row of nail machines, the great width of the room and its bright light enabling this to be done, leaving at the same time an abundance of room for passageways for the transportation of wire and wire nails.

These buildings are all heated by overhead pipes, through which waste steam is driven by a small pump in the engine room after use in the engines. This system has been found to work admirably and is much preferred to radiators on the floor, which can be tampered with by workmen who are either always warmer or colder than their neighbors. The engineer has sole charge of the heating apparatus. The engines in use were built by the Kirby Mfg. Company. A 500 horse-power engine is used for the nail factory, and a 1000 horse-power engine is used for the wire mill. An accompanying sketch, Fig 6, shows how they are arranged in the same engine house to operate these distinct plants of machinery. In an early issue we shall present drawings of this engine with complete description.

The warehouse and shipping department are at present located in the south end of the nail factory, which is an exceedingly convenient arrangement for receiving the completed nails from the machines, keging them and placing them on cars for shipment.

#### Terminal Facilities of New York.

The terminal facilities of New York City, designed to expedite the handling of freight transferred by the several trunk railroad and steamship lines, are too extensive and complicated to allow of description in detail, but the general plan of the thoroughly equipped system of the New York Central and West Shore lines may be briefly outlined. Improvements are being constantly added. Most of the railroad business with the New York docks, and all the business with the Brooklyn storehouses and other points in the harbor, is done by means of lighters or barges. The regular transatlantic liners and other large vessels having regular docks do not leave them. The tracks of the New York Central enter some of these docks, but it is usually found more advantageous to use lighters. The lighterage plant of the company has been largely increased during the past year, and now covers a valuation of about \$3,000,000. It consists, in the first place, of 65 barges, which number is increased by charters in the busy season to 120, and three of which are rigged with steam-hoisting machines capable of lifting 15 tons.

Besides, the company own 22 car floats, 50 grain canal boats and five steam freight propellers, and numerous tugs. Two barges with powerful steam hoisting derricks are being constructed. The minor features in the system comprise the freight yards at the Sixtieth street station, together with adjacent docks and elevators. The area of the main yard is 57 acres, including the stock yard and abattoir. The

grain elevator at that point cost \$600,000, and has 1,500,000 bushel capacity. It is 350 feet long and 100 feet wide. The structure has 10 elevating "legs," with a capacity of 6000 bushels each per hour. There are two "in" tracks running into the elevator, each capable of holding 10 cars and giving an unloading capacity of 200 cars every 10 hours. There is also one "out" track holding 10 cars, which is used for the purpose of loading, grain being shipped out of the elevator to points on the road. It has a capacity of 25 cars per day. While all this work is going on the elevator cars deliver to boats to the extent of 2,000,000 bushels per day.

There are six shaded piers, all, with a single exception, two-decked timbered structures covered with corrugated iron. There are no posts in the center of the lower deck, and the second stories are supported by rods from the roof. The floor joists are calculated to hold a load of 400 pounds to the square foot. The piers under consideration have the latest hoisting machinery, almost automatic, for transferring merchandise from the main deck to the second story. There are six of these elevators on each pier worked by one engine having an adjustable cut-off. At the usual rate of speed each elevator raises in actual practice, including the movement of the cars, 500 barrels per hour. The freight is lowered by the same contrivances, except that no steam is used.

The Thirty-third street station, comprising about 50 acres, is the most conveniently located for the uptown trade and a large portion of the manufacturing trade. Two covered piers have recently been constructed. Branch tracks provide for the slaughter and pork-packing houses lying to the north, as well as the iron works and lumber yards at the south and for the steamship companies. One of the two piers at this point is an iron, single-storied, truss-roofed structure, and is considered to be fire-proof. The entire side of the pier can be opened up for business, as it is built of rolling iron shutters, which are raised and lowered by pulleys. There are here two large fire-proof warehouses, each 500 x 50 feet, subdivided into fire-proof compartments, 75 feet in length, by iron gates that are so arranged as to be immediately closed in case of fire, so that a fire, should it originate, may be confined to the compartments in which it starts. One of these warehouses is for eastbound and the other for westbound freight. Another feature is the new stores of the Terminal Warehouse Company near Eleventh avenue and Twenty-eighth street, together with a cold storage plant and covered iron shed, which cost nearly \$2,000,000.

If in a general survey we take into view the extensive warehouse system and elevator and dock arrangements of the Pennsylvania, Erie and West Shore railroads (the latter is at Weehawken, on the west bank of the Hudson River, not to speak of facilities in Brooklyn at Atlantic Dock and Erie Basins) some adequate conception can be formed of the many million dollars that have been expended in the interest of traffic at New York, and something can be judged respecting improvements yet to be made, when Manhattan Island has been connected in various directions with the main land by tunnels and bridges now in contemplation.

The contract for water pipes and hydrants on the exposition grounds at Chicago has been awarded to T. C. Brooks & Co. of Jackson, Mich., for \$60,771. The Transportation Building has also been placed under contract, all the work going to Chicago firms, as follows: Carpentry work, William Goldie & Son, \$117,500; lathing and plastering, Phillipson Decorative Company, \$5811; paint-

ing and glazing, the W. H. Stubbings Company, \$6600; roofing, the Smith & Cade Company, \$30,580; exterior covering, Phillipson Decorative Company, \$43,559.

#### The Love Electric Street Car System.

A company has been formed in Chicago for the purpose of testing the Love system of street-car propulsion by underground wire. The promoters of the enterprise will be permitted to construct an experimental track on one of the cross lines of the North Chicago Street Railroad Company in order to demonstrate the practicability of the system, which the inventor claims can be built at one-fourth the cost of cabling. As overhead wires are not permissible in Chicago and cabling is too expensive for street-car lines running as feeders to main lines, attention is being

the conductors is readily accessible without interfering with or delaying traffic. The location of the motor is a new departure. In nearly if not all systems heretofore used the motor is placed under the car, necessitating frequent removal on account of dirt, &c. The motor is hard to get at, and its proximity to the ground

can exercise complete supervision over it. The elevation of the motor gives the motoneer a high platform to stand upon, also giving him a view of the whole interior of the car.

The contact wheel or trolley for collecting the current is an ingenious device having two contacts for each conductor so

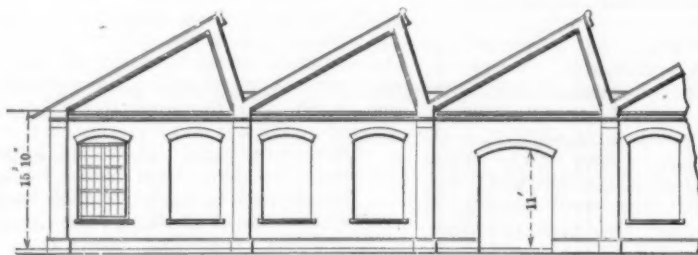


Fig. 5.—Roof of Wire-Nail Mill.

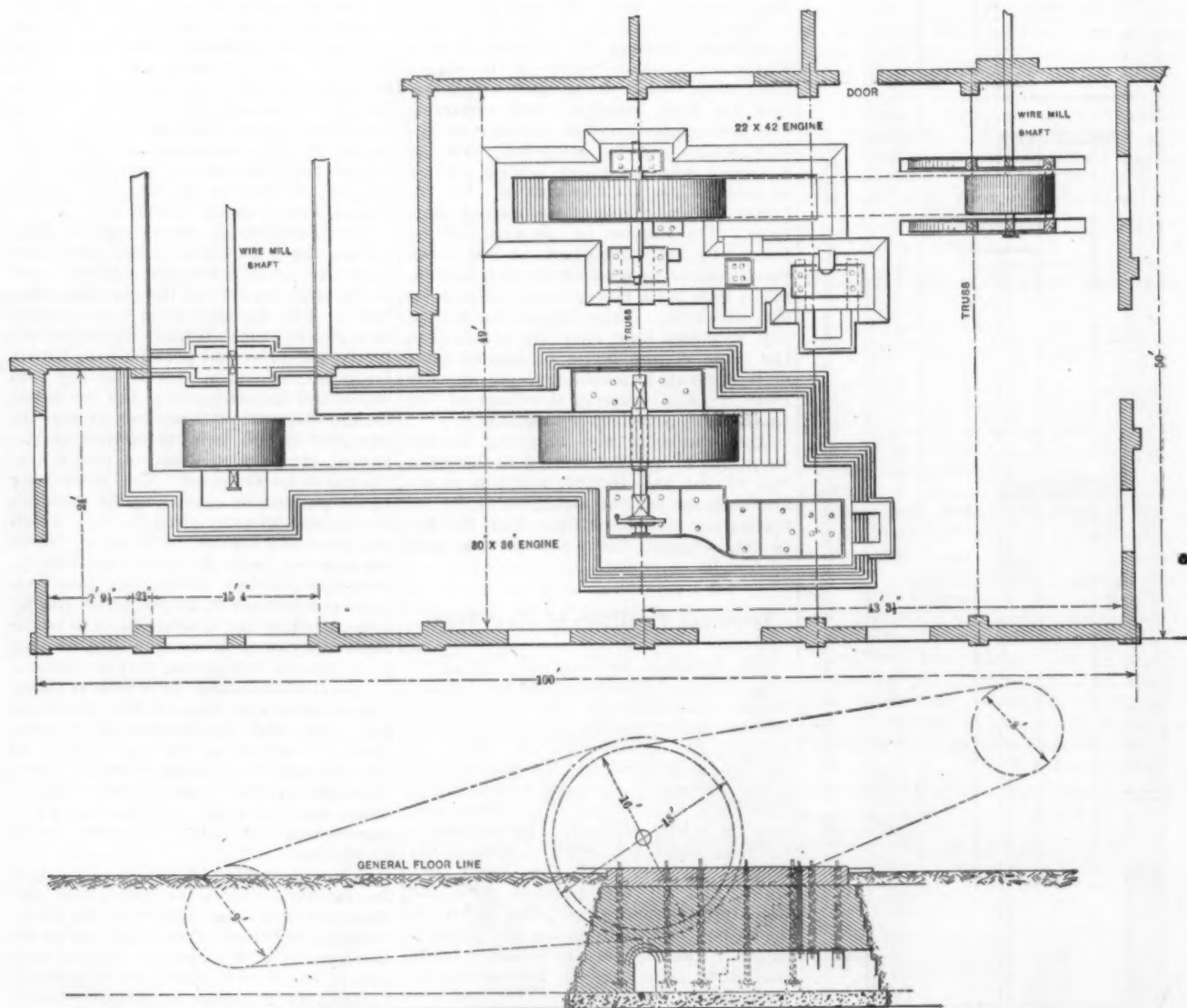


Fig. 6.—Plan of Engine and Vertical Section, Showing Belting.

#### THE BAACKES WIRE-NAIL WORKS.

directed to the underground electric system. The Love system is thus described:

The conduits much resemble those of the cable roads, only they need not be quite so deep nor yet so expensive. The conducting wires are placed in the upper part of the conduits, thoroughly insulated therefrom by glass, and are completely protected from the moisture, dirt and other elements that give so much trouble to the exposed and overhead conductors now in general use on electric roads. The form of the conduit is such that any part of

involves great expense owing to the destruction of the armature. In the Love system the kingbolt of the car is in front of the axle to enable the placing of the motor above the axle. It is covered by heavy plate glass on which the motoneer—the driver—stands while directing the car. An electric light burns in the compartment in which the motor is placed, so that the motoneer can at all times see the mechanism. He can raise the glass covering and get at the motor rapidly and at all times; while the car is in motion he

that should one fail the other has sufficient capacity for transmitting the current to the motor. These trolleys are drawn into contact with the conductor by spiral springs, but should the springs fail there is a safeguard in the arm of the trolley, with which the trolley can be pressed against the conductor.

The cars are thoroughly insulated so that no shock can be given anybody on the car, while the insulation of the underground wires prevents the distribution of the current, also preventing the charging



of the rails, which has given teamsters and others who cross electric roads so much trouble.

The advantages claimed for the Love system are the metallic circuit completely cutting off the ground, thorough insulation; the doing away with overhead wires; cheapness of construction; the ability of the street car line to cross itself at any angle, or to cross swinging bridges or steam railroads where no conduit is permitted. The chief feature of the system, however, is its promise of a maximum of convenience to the public. The road is so complete in detail, the inventor says, that the only trouble that can arise will be at the power house. This would be exceptional. The motor will not need removal, and the wires, should they need attention—a remote possibility, the inventor says—are readily accessible at any point of the track, just as the cable is. The forward wheels of the car are connected with an arm and work much as the driving wheels of a locomotive. The noise of the car used in the overhead wire system is entirely done away with, while the cars are lighted and heated by the electricity before the current is returned.

The Chicago company is named the Love Electric Traction Company. The officers are P. C. Hanford, president; John A. Roche, vice-president; John G. Shortall, treasurer; Albert G. Wheeler, secretary and general manager.

Drawback on Carriage and Tire Bolts.

The Treasury Department has rendered the following decision under date of May 18, 1891:

On the exportation of "carriage bolts" and "tire bolts" manufactured by Welsh & Lea of Philadelphia, Pa., the bolts being made from imported iron, and having nuts made from domestic material, fitted and attached thereto, a drawback shall be allowed equal to the amount of duties paid on the iron used in the manufacture of the bolts, less 1 per cent. of such duties.

The quantity of imported iron used shall be determined by deducting from the weight of the exported articles the weight of the nuts attached to the different kinds and sizes of bolts, and adding to the weight of the finished bolts so found the amount of wastage incurred in their manufacture, as indicated in the following schedule, viz.:

Size of bolt.	Weight of nuts per 1000.	Wastage of material per 1000	
		Carriage bolts. Pounds.	Tire bolts. Pounds.
3-16 inch .....	7 pounds.	2	1½
¼ inch .....	10 pounds.	3½	1½
5-16 inch .....	20 pounds.	6	1½
¾ inch .....	30 pounds.	9½	1½
7-16 inch .....	50 pounds.	11	.....

The drawback entry must show separately the number and weight of each variety of article exported, describing each variety by kind and size, or diameter of bolt.

The total weight of the articles exported shall be ascertained by a United States weigher.

United States Attorney-General Miller has rendered a decision that will be of great interest to foreign exhibitors at Chicago. It is to the effect that these exhibitors can bring with them enough employees to show the process of manufacturing the goods they display without being held for violation of the contract labor law. The decision was rendered at the

request of the French consul in Chicago, who represented that many manufacturers in France would not take part in the fair unless they could bring a limited number of employees along.

District Steam Systems.

In a paper by Charles E. Emery on the above subject, read before the American Society of Civil Engineers, we find the following remarks as to the probable and future business of so-called steam-heating companies:

The District Steam Company cannot hope to permanently supply a very large quantity of power at a particular location, except to an enterprise associated with it in a business way; but all the electric light plants will start their business by purchasing steam, and be happy to pay for continuing a connection to be used in emergencies afterward. Again, there is in every city a demand for power and heat, in small manufactories. In New York there is a surprising number of such located in the lofts of buildings, in many of which the other floors are occupied for other business purposes. In this way ample power is obtained, in locations where the simple handling of the coal and ashes to portable engines would make the use of the latter prohibitory. On the whole it will be seen, then, that the steam system is a great public convenience, and the commercial question in regard to further constructions of the kind must depend upon various financial and local conditions. There can be no question but that if a large number of property owners in a given district would associate themselves together and put up a steam plant for the improvement of their property, the enterprise would be a remunerative one, even in a business neighborhood. It is doubted, however, if in such a neighborhood the profits realized would be such as to warrant the intermediate action of promoters and large issues of stock. In a neighborhood of dwellings of well-to-do people there is, however, a very large and important field for district steam systems, particularly if the steam be simply used for heating purposes during the period heat is required, and the plant be shut down in summer, so that the operating expenses are saved. Plants of this kind pay well even in the coal regions of Pennsylvania. In the bituminous regions the residents use anthracite coal in their houses, because it is less liable to injure the furnishings by dust and smoke, whereas a district steam company can, in an out-of-the-way place, burn the slack of the bituminous coal, purchased at a little more than the price of haulage. In other cities, whether near or far from the coal regions, coal of large size and good quality is used in the furnaces and steam boilers of the wealthy and well-to-do, while a steam-supply company can use fuel of a very inferior kind, purchased in quantity at a very greatly reduced cost. If, then, the steam plant be constructed cheaply, as is possible with a pressure not exceeding 40 pounds, it is believed that heating systems of this kind will pay in any dwelling neighborhood, even when the houses are widely separated, with considerable ground around each. In locations where water is cheap water coils can be used to utilize the waste heat from the rejected water.

It is predicted that the largest use of steam will eventually be in foreign countries, where there are restrictions upon the erection of steam boilers in the city limits. In such cases the plant of the New York Steam Company would practically be duplicated (under conditions, of course, making it possible to obtain good work). There would be both a main steam pipe capable of distributing steam at high

pressure and a return pipe, so that the hot water and steam would be kept out of the sewers. Such a plant, for reasons above stated, would add greatly to the value of the property along the line, and the prices which would be obtained would insure a good interest on the investment. It would be entirely practicable in some cities to carry out a plan proposed for San Francisco—to wit, to use high steam pressure in the manufacturing and office neighborhoods, discharge the exhaust steam into other steam mains, and conduct the same to dwelling neighborhoods in the vicinity, for heating purposes, from which the return water would either be discharged into the sewers at a low temperature under proper supervision, or if water was high priced, be returned to the station.

Utilizing Exhaust Steam.

In the discussion following the reading of this paper Mr. Emery said:

Steam heating considered simply as a business, has been practiced with some measure of success by every steam fitter throughout the country, but such business is really founded on scientific principles worthy the efforts of engineers of talent who have had the best opportunities. This is shown by the results accomplished by the author of the paper and his associates, long before steam fitting as a business became established, and it will be seen that recent efforts are but modifications of the developments so thoroughly worked out years ago in the Eastern mills.

There are many buildings in large cities which are heated entirely by exhaust steam, and in a very few cases the surplus is distributed to adjoining buildings. It has been suggested to connect the exhaust pipes of the engines of various establishments to a street main and so distribute the steam. The idea has been previously suggested, and was carried out in the steam plant at Lynn, which failed for financial reasons connected with the organization of the company. A plan has been worked out in detail to collect the exhaust steam from the engines in the business districts of San Francisco, and conduct it to the closely adjacent resident district, but the scheme has not yet received sufficient financial support. Such a system is not generally applicable, on account of the multiplicity of connections. In a large city it is undesirable to waste the water of condensation from heating coils; 1, on account of the value of the water itself; 2, on account of the heat in contains, and 3, on account of the inevitable nuisance arising from discharging hot water into the sewers. With proper water coils, little more than tepid water should be discharged, but in cities many users do not have the space, and many that could arrange that feature are not inclined, on account of the cost, to provide such coils, so that water at a high temperature, which will discharge a considerable percentage of steam in cooling, is admitted to the sewers, to the injury of the brickwork and the discomfort of the public. It follows, then, that a proper exhaust system must have three pipes; 1, the main steam pipe; 2, the low-pressure or exhaust pipe to supply steam for heat, and 3, a return water pipe. This makes the number of connections so great that the system is not practicable, except where the location is particularly adapted to its use. In 1882, when connecting a large electric-light plant in Fulton street to the mains of the New York Steam Company, a section of a large main was laid with outlet to receive the exhaust from the engines, but no exhaust connections were made, as other work demanded immediate attention, and the buildings in that particular vicinity were occupied by a large number of small tenants, so that there was no unanimity of action in taking steam for heating pur-

poses. In San Francisco the manufacturing and business district is so well defined, and yet located so near a well-defined resident district, that the plan is particularly applicable.

In the introduction of exhaust steam for heating, it was realized that the mains must be larger than when steam of higher pressure is circulated, so that the system appeared to be limited to new buildings, or those in which steam pipes were applied for the first time. This difficulty has been overcome, comparatively recently, by the connection of an air pump to the lower end of the return pipes, so as to produce a partial vacuum and induce a current in that direction, even when the steam for heating was supplied at a comparatively low pressure from the exhaust of steam-engines. In some cases the air-pump is supplemented with a condenser which reduces the amount of vapor to be handled. This device should not be necessary when the return pipes are so arranged as to act as heating surface.

## NEW PUBLICATIONS.

**METAL TRADES DIRECTORY FOR NEW ENGLAND AND NEW YORK STATE.** Published by Price, Lee & Co., 206-210 Meadow street, New Haven, Conn. Price, \$4.

The well-known metal trades directory, published by Price, Lee & Co., has just been issued for the year 1891, and judging from the study of several localities chosen at random, covers the wide field well. It embraces both a classified and an alphabetical list of manufacturers and dealers in machinery, engines and hardware. The book is clearly printed and neatly bound, and will prove very serviceable to those who desire to extend their trade by sending circulars and other trade matter.

**THE STANDARD GUIDE TO CHICAGO** for the year 1891. By JOHN J. FLINN. 543 pages. Flinn & Sheppard, 95 Dearborn street, Chicago; price, \$1.50.

Through the courtesy of Pickands, Brown & Co. of Chicago we have received a copy of Flinn's "Standard Guide to Chicago for 1891." This volume comprises 543 pages of most interesting information concerning the great city of the West. Details are given relating to the city's manufacturing enterprises, its great commercial interests, its wonderfully fine transportation facilities by land and water and all other business agencies and instruments, but the book aims to be much more than a mere business directory, and enters as well into the description of other features of the city, especially interesting to the tourist or the casual visitor. It is profusely illustrated with sketches of park scenery, views on residence and business streets, and pictures of all the recently erected large buildings for which Chicago has so suddenly become famous, whether public or private. The book is divided into five parts, as follows: Chicago As It Was; Chicago As It Is; The Encyclopedia; The World's Columbian Exposition; The Guide. Suitable maps form a part of the volume. In fact, it would be difficult to name a feature of value to a stranger anxious to know all about the city of Chicago that has been overlooked. The compilation of the facts presented has been a prodigious task, and the author deserves much credit not alone for his industry, but also for the ability with which he has put together the great variety of information thus collected. The greatness of Chicago has perhaps never before been so completely described.

The *Toronto Globe* ridicules the idea of granting a subsidy to the proposed Hudson's Bay Railroad, which it says will open a country containing 100,000 square

miles, with less than 200,000 population. It protests against the opening of further "wastes," while Canada already has more surveyed lands than will be populated at the present rate of natural increase and of immigration in 100 years.

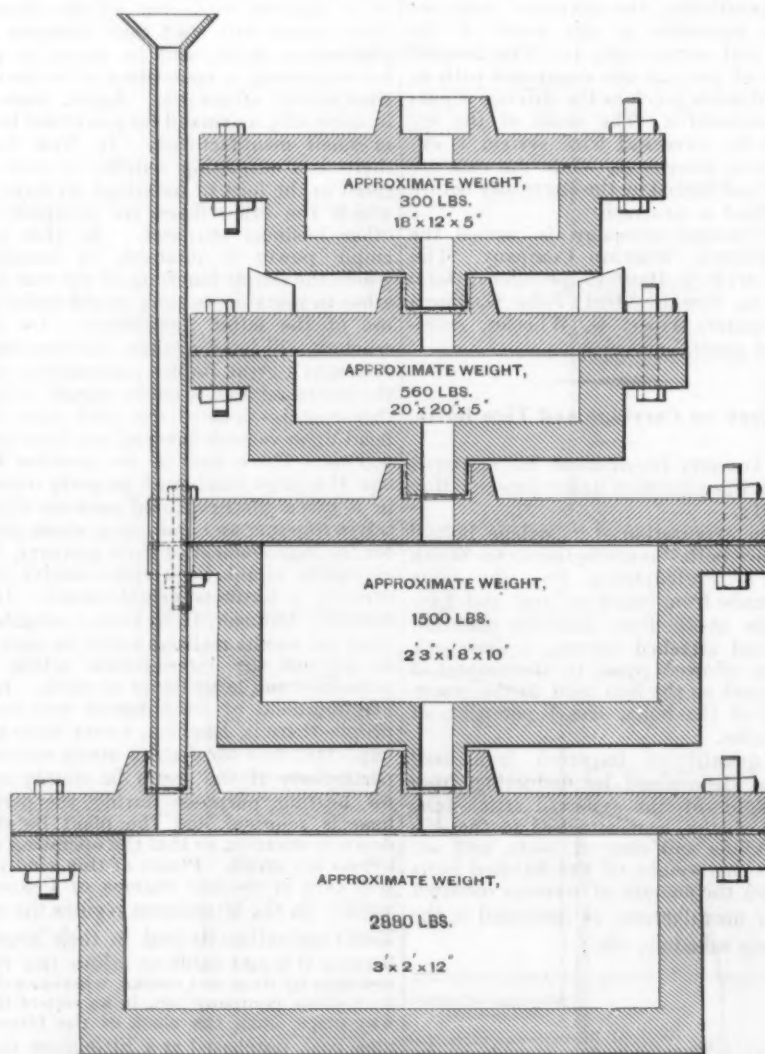
## Casting Plate Slabs.

Joseph Parkes of West Superior, Wis., has brought out a method of casting steel ingots for boiler and ship plates horizontally, with the object of producing a slab free from blow holes, and as closely approximating to the size and weight for the finished plate as possible, in order to reduce shearing to a minimum. The ac-

mer will drive the cotter out, and thus they will be disconnected at once, leaving the different separate parts of the flasks and ingots to be handled by the cranes with ease.

Detached wedge-shaped Socle plates are to be used for supporting the flasks in a level position, as shown below the top mold. They may be cast about 1 foot long, and can be easily fixed at will. The runner gates can be broken off while hot with a hand hammer without any difficulty.

The final volume on mines and mining of the Eleventh Census shows that the total value of the mineral products of the United States at the latest date amounted



THE PARKES DESIGN FOR CASTING PLATE SLABS.

companying engraving indicates the design. It is necessary to make the bottom mold the largest, in order to admit of an easy connection to it of the conduit.

As the metal gradually rises in the molds, the air contained in the chambers, together with any gases given off by the metal, is forced into the open air through the orifices connecting one chamber with other.

No importance should be attached to the particular sizes of the molds shown in the illustration, since they are intended merely to show that it is possible to make them in any weight or shape desirable, and that the number may be adjusted to suit any purpose.

The joints can be rendered safe from bleeding by the use of putty made from asbestos, plumbago, gannister, &c.

Cotter bars are indicated in preference to screwed bolts and nuts for closing the molds tight, because a blow with a ham-

mer will drive the cotter out, and thus they will be disconnected at once, leaving the different separate parts of the flasks and ingots to be handled by the cranes with ease.

The manual school of the Jewish orphan asylum to be erected in Cleveland, Ohio, will be a substantial structure of brick and stone, in which machinery will be introduced, such as lathes and saws, for instruction in the mechanical trades. It is not expected that the boys will learn complete trades, but that they will go out of the asylum with some knowledge of mechanical work, so that they will not be obliged to commence at the very beginning.



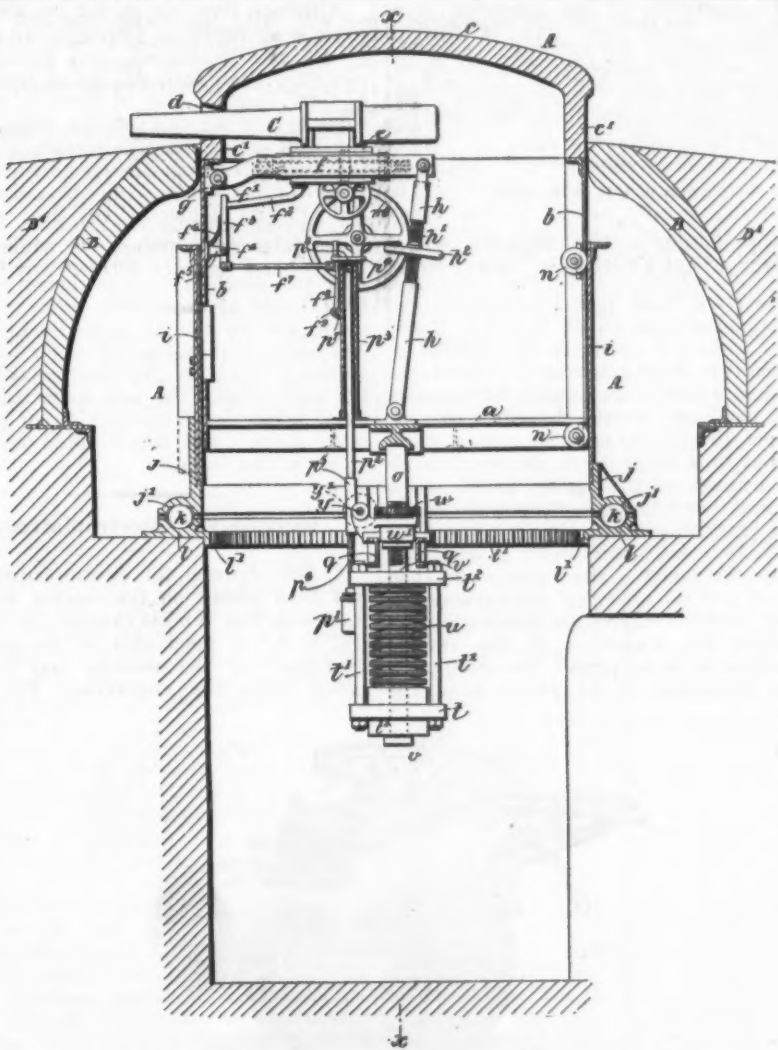


Fig. 1.—Central Vertical Section of Disappearing Turret.

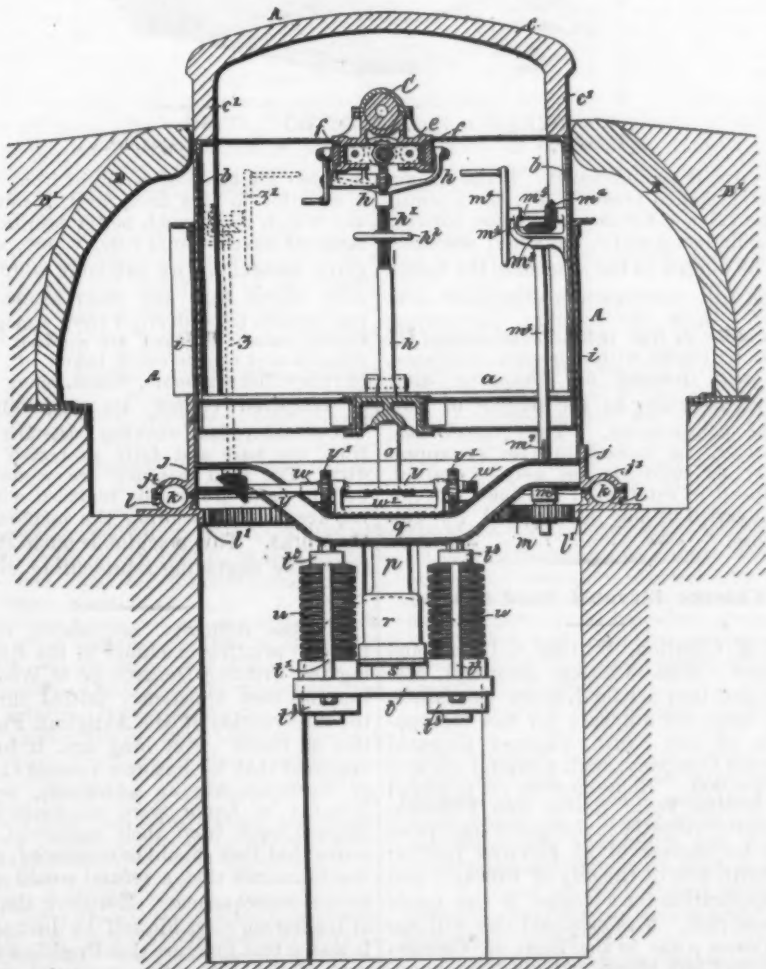


Fig. 2.—Vertical Section on Line xx of Fig. 1.  
THE CANET DISAPPEARING ARMORED TURRET.

The Canet Armored Turret.

The accompanying engravings show the principal features of the disappearing armored turret which has lately attracted much attention in Europe. It has just been patented in this country by J. B. G. A. Canet of Paris, one-half the right being assigned to Sir Joseph Whitworth & Co., Limited, of Openshaw, England.

The turret comprises the combination of two hydraulic cylinders which may be placed in communication with each other. The ram of one cylinder supports the weight of the turret, while the ram of the other is loaded by springs provided with means for adjusting them in order to regulate their initial compression. By this arrangement the turret may, after the firing of the gun mounted within it, be allowed to disappear slowly or quickly, as desired.

The turret A is sunk in a pit and is protected by an armored shield, B, surrounded

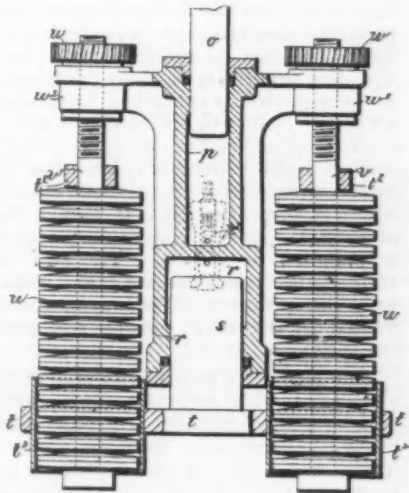


Fig. 3.—Enlarged View of Hydraulic Cylinder.

by a thick course, B, of stone work or concrete. The turret comprises a vertically movable and rotating portion and another portion which, though it rotates therewith, does not participate in the up and down movement. That portion moving up and down consists of a platform, a, upon which is mounted the cylindrical casing b, which supports an armored spherical roof, c, having a cylindrical portion, c'. In the latter is formed the porthole through which the gun is fired.

The gun is mounted in a cradle or top carriage, e, arranged to recoil upon a chassis, f, pivoted to a bracket, g, secured to the wall of the turret. The chassis is supported at its rear end by a forked rod, h, formed in three pieces, the central portion h' having right and left hand screw threads which fit into correspondingly threaded holes in the upper and lower parts of the rod. The middle part is provided with a hand wheel, h<sup>2</sup>, by which it may be rotated and the gun thereby elevated or depressed. The vertically movable portion of the turret can be lowered until the cupola c rests upon the shield B. This part of the turret is surrounded by a casing, i, of sheet metal which is carried by a ring, j, this forming the other portion of the turret, which is capable of rotation, but has no vertical movement.

The ring j is formed with an annular groove or channel j', and is supported through the medium of spherical rollers or balls, k, upon a roller path, l, attached to the wall of the pit. The roller is provided with an internally toothed ring, l', with which is geared a toothed wheel, m, mounted on a vertical spindle carried in suitable bearings, m<sup>2</sup>. The shaft m' has

fixed on it a miter wheel,  $m^3$ , which is geared with another miter wheel,  $m^4$ , fixed upon a horizontal spindle,  $m^5$ , carried in suitable bearings and provided with a hand wheel,  $m^6$ . By rotating the hand wheel the turret may be turned about its axis to train the gun. To insure the turning of the wheel  $m$  with its shaft, notwithstanding the vertical movement of the parts  $a, b, c$  of the turret, the shaft  $m^5$  is so arranged that it can move up and down in the boss of the toothed wheel  $m$ , and is provided with a long groove or keyway,  $m^7$ , in which fits a feather, so that the shaft, while free to slide in the toothed wheel, is rotatively connected therewith; or the spindle  $m^5$  may be provided with a long key or feather fitting into a corresponding keyway in the boss of the toothed wheel  $m$ .

The vertically movable portion of the turret is guided within the casing  $i$  by means of rollers  $n$ , and is supported by the ram  $o$  of hydraulic cylinder,  $p$  shown in section in Fig. 3. This cylinder is carried by two girders  $q$  firmly attached to the ring or annular piece  $j$ , and the cylinder communicates with a second cylinder,  $r$ , of larger diameter, in which works a ram,  $s$ . The communication between the cylinders  $p$  and  $r$  is regulated or controlled by means of a valve,  $p'$ , which is operated by a rod,  $p^2$ , carried by a bracket,  $p^3$ , and provided with a hand wheel,  $p^4$ . The ram  $s$  is firmly connected with a cross piece,  $t$ , which is suspended by side rods  $t'$  from other cross pieces  $t^2$  resting upon springs  $u$  mounted on rods  $v$ . The ram acts through the cross pieces  $t$  and rods  $t'$  upon the springs  $u$ . The cross piece  $t$  is guided by sleeves  $t^3$ , passing freely over the springs  $u$ .

The rods  $v$  are provided at their upper extremities with screw-threaded portions which extend through correspondingly screw-threaded holes in worm wheels  $w$ . These worm wheels are supported by a cross piece,  $w'$ , formed on the cylinder  $p$  or firmly attached to the girders  $q$ .

The worm wheels  $w$  are operated by means of a horizontal shaft,  $y$ , having fixed on it worm wheels  $y'$ , geared with the wheels  $w$ . The shaft  $y$  is driven by a vertical shaft,  $z$ , carried in suitable bearings and connected by bevel pinions with the shaft  $y$  and with a hand wheel,  $z'$ , situated within reach of the gunner.

The rod  $p^2$  for operating the valve  $p'$  is formed in two parts, one of which is provided with a socket,  $p^5$ , in which slides the other part  $p^6$ , so that the two parts will be connected, notwithstanding the up and down movement of the turret. To insure the turning of the two parts of the rod together, the lower part  $p^6$  is provided with a suitable feather adapted to fit in a corresponding groove in the socket  $p^5$ .

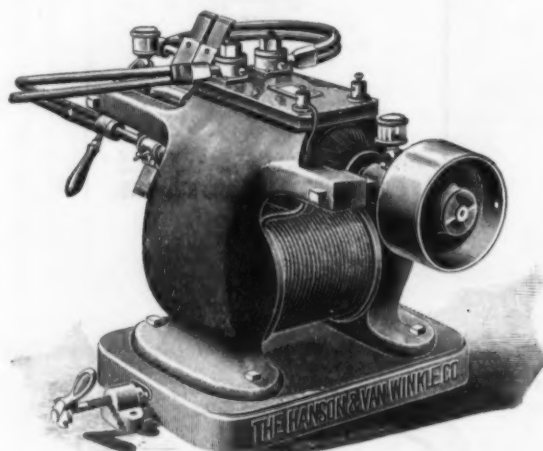
To prevent the descent of the vertically movable portion of the turret before the gun is completely within the same, an arm or projection,  $f^1$ , on the forward end of the top carriage  $e$  is provided. This arm bears against a lever,  $f^2$ , pivoted at  $f^3$  to lugs  $f^4$ , attached to the wall of the turret. Against the lever  $f^2$  bears a spring,  $f^5$ , and the lever is connected by means of a rod or link,  $f^6$ , to a lever,  $f^7$ , pivoted at  $f^8$  to lugs  $f^9$  upon the bracket or standard  $p^3$ . The upper extremity of the lever  $f^7$  serves as a stop pawl and is adapted to engage with the teeth of a ratchet wheel,  $p^8$ , fixed upon the rod or stem  $p^2$  (whereby the valve  $p'$  is opened or closed), and thus prevent the operation of the rod. When the gun, after firing, is withdrawn into the turret by the recoil or otherwise, the arm or projection  $f^1$  being moved away from the lever  $f^2$  allows the spring  $f^5$  to move the lever, the connecting rod  $f^6$  and the lever  $f^7$ , so as to disengage the pawl from the ratchet wheel  $p^8$ , and thus permit the opening of the valve  $p'$  by means of the hand wheel  $p^4$ .

The operation of the apparatus is as follows: When the gun is fired it recoils with the top carriage  $e$  along the beam  $f$  until the whole of the gun is within the turret. Communication may then be established between the cylinders  $p$  and  $r$  by opening the valve  $p'$ . When the cylinders are thus put in communication with each other, the weight of the vertically movable portion of the turret causes the same to descend, the ram  $o$  forcing the liquid from the cylinder  $p$  into the cylinder  $r$ . The ram  $s$  and cross piece  $t$  are thus forced downward and through the medium of the rods  $t'$  and cross pieces  $t^2$  compress the springs  $u$ . When it is desired to raise the turret, the toothed wheels  $w$  are rotated by means of the handgear above described in the proper direction to raise the rods or stems  $v$ , and thus cause them to act through the medium of the spring  $u$ , the cross pieces  $t^2$  and the rods  $t'$  upon the ram  $s$ . This ram rising in the cylinder  $r$  forces the liquid back into the cylinder  $p$ , and thus raises the turret. The valve  $p'$  is then closed, and the springs  $u$  are slackened or their initial compression diminished by rotating the wheels  $w$  in the reverse direction, so as to permit the disappearance or descent of the turret when the

Although there are as yet no elevated roads in operation in Chicago, two are in course of construction, and will be in operation at an early day for at least part of their length. One of these is on the south side of the city and the other is on the west side. The completion of both these roads has been hindered by obstructions of many kinds, arising from dissatisfied property holders along their route, new legislation by City Councils, delay on the part of mills furnishing the structural iron and steel, &c. Now, however, the time is near at hand when trains will begin to run on one of these lines, which will certainly stimulate efforts for such facilities of travel in the other sections of the city. Hence the new north side elevated scheme has a stronger air of probability about it now that it would have had a year or two since.

#### Dynamo For Electroplating.

A new dynamo for electroplating has just been placed on the market by the Hanson & Van Winkle Company of Newark, N. J. A good idea of the general appearance of the machine may be obtained from the engraving. The field



DYNAMO FOR ELECTROPLATING.

said valve is again opened. If the springs  $u$  are slackened previous to the opening of the valve  $p'$  for communication between the cylinders  $p$  and  $r$ , but slight resistance will be offered to the descent of the turret, which will consequently disappear suddenly. If, on the contrary, the springs have more or less initial compression the turret will meet with increased resistance, and will descend or disappear more slowly, according to the degree of such initial compression. The turret can, moreover, be caused to rise or appear slowly or suddenly, as may be desired, the speed of rotation of the hand wheel  $z'$  being varied as may be required for this purpose.

#### A Chicago Elevated Road Scheme.

F. M. Charlton, William I. Cronin and Edward Chiles, Chicago attorneys, who state that they act for Eastern capitalists, have taken out a license for the incorporation of the North Chicago Elevated Railroad Company, with a capital stock of \$10,000,000. Representatives of moneyed men in New York, Boston and Philadelphia have recently investigated the prospects for success of an elevated road on the north side of the city of Chicago, and the application for a charter is the result of their visit. The proposed line will run from some point in the heart of Chicago north on Clark street, and will tap a populous district which is now much in need of rapid transit.

magnets are made of wrought iron, which is superior to cast iron for this purpose, and which gives much better results. The magnets have a round core, which, with a given amount of wire, produces more powerful effects than any other shape. All the benefits to be derived from a magnetic circuit unusually short are secured. The commutator can be easily taken off, so as to renew the segments, which, being made of tempered copper, are very durable. The armature and working parts are away from the base and fully protected from dirt. The field magnets are wound on bobbins and are readily replaced without the necessity of sending the machines to the works. This machine is made in five sizes, the engraving representing sizes 1 and 2.

A labor difficulty, originating in hostility to printing machines in the Engraving and Printing Department at Washington, has been apparently settled through the intervention of the American Federation of Labor. Not long ago, it having appeared that for business reasons the use of machines was an advantage, several Knights of Labor were discharged. A demand came from their aggrieved associates that they should be reinstated, and it was intimated that a refusal would entail serious consequences. Moreover, the chief of the bureau must himself be discharged. It was at this juncture that President Gompers of the Federation appeared on the scene, and word comes that the matter has been satisfactorily arranged.



## Treasury Decisions.

## WIRE AND STEEL ROPE.

Before the United States General Appraisers at New York, June 11, 1891. In the matter of the protest, 5910<sup>u</sup>, of John W. Mason & Co., against the decision of the Collector of Customs at New York as to the rate and amount of duties chargeable on certain wire and steel rope, imported per Alaska, October 14, 1890. Opinion by Somerville, General Appraiser.

We find as matters of fact that the merchandise under consideration consists of the following articles: 1. Iron wire rope, made of wire smaller than No. 16 and not smaller than No. 26 wire gauge, and valued at more than 4 cents per pound; 2, galvanized steel wire rope, made of wire No. 15 wire gauge, valued at more than 4 cents per pound, and 3, galvanized iron wire rope No. 23½ wire gauge, valued at more than 4 cents per pound.

The duties on these articles were assessed under the provisions of paragraph 148 of the new tariff act. The specific duties on the wire being less than 45 per cent., this rate of duty ad valorem was first assessed on the articles, and to this duty was added the several specific duties provided by said paragraph in iron and steel rope respectively.

The last proviso of paragraph 148, above cited, declares in plain terms that "all iron or steel wire valued at more than 4 cents per pound shall pay a duty of not less than 45 per centum ad valorem," except card wire for the manufacture of card clothing.

The wire composing the present importations of wire and steel rope and of which the rope is made is valued at more than 4 cents per pound and the duty on it cannot, therefore, be less than 45 per cent. ad valorem.

The same section also contains this clause:

"On iron-wire rope, . . . 1 cent per pound in addition to the rate imposed on the wire of which it is made; [and] on steel-wire rope and wire strand, 2 cents per pound in addition to the rate imposed on the wire of which they or either of them are made."

The purpose of the law seems to be, in accordance with the general policy of all American tariff laws since the one first approved July 4, 1789, to encourage and protect manufactures of all kinds, including the manufacture of wire rope. The plain mode of doing this is to exact a duty on wire rope additional to that on the wire from which it is made. The proviso to the same paragraph (148), relating to the duty on wire cloths and nettings, illustrates the same line of policy and throws light on the legislative intention. It reads as follows: "That iron or steel wire cloths, and wire or steel-wire nettings, made in meshes of any form, shall pay a duty equal in amount to that imposed on iron or steel wire used in the manufacture of iron or steel wire cloth, or iron or steel wire nettings, and 2 cents per pound in addition thereto."

We see no way of escaping the conclusion that our prior decision, G. A. 313, announces a construction of this paragraph which, upon more deliberate consideration, we believe to be erroneous.

The decision of the Collector, being in accordance with these views, is affirmed.

## STUBBS STEEL RODS.

Before the United States General Appraisers at New York, June 15, 1891. In the matter of the protest, 5054<sup>b</sup>, of G. W. Sheldon & Co., against the decision of the Collector of Customs at Chicago as to the rate and amount of duties chargeable on certain Stubbs steel rods, imported per Wisconsin, C. entry 431. Opinion by Wilkinson, General Appraiser.

The protest states that the merchandise is round steel wire, in 2-foot lengths, known as Stubbs steel rods. The invoice

describes it as "round steel wire No. 5 to No. 10." The appraiser reports that all of the steel wire is smaller than No. 6 wire gauge, and it was consequently classified as wire, under the proviso of paragraph 147, N. T. As it is valued at over 4 cents a pound, it was assessed for duty at 45 per cent., under paragraph 148.

As the provisions named appear applicable to the merchandise in question, we cannot sustain the claim of the importers that the wire is dutiable under paragraph 146 as steel in all forms and shapes not specially provided for.

The decision of the Collector is affirmed.

## ROLLED CHARCOAL BAR IRON—CERTAIN SO-CALLED RIVET OR SCREW IRON-WIRE RODS DUTIABLE AS.

Before the United States General Appraisers at New York, June 15, 1891. In the matter of the protest, 3750<sup>b</sup>, of Bacon & Co., against the decision of the Collector of Customs at Boston as to the rate and amount of duties chargeable on certain rolled charcoal bar iron, imported per Durham City, November 7, 1890. Opinion by Lunt, General Appraiser.

The merchandise the subject of this protest is invoiced as "2293 bundles of rolled charcoal bar iron." It was imported from Sweden into the port of Boston, per steamer Durham City, and entered for consumption November 7, 1890. Other iron was designated in the same invoice as "6736 bars," these words immediately preceding the item of bundles above mentioned. The sizes and shapes of the iron referred to in this protest are as follows:  $\frac{1}{8}$  to  $\frac{1}{4}$  inch round,  $\frac{1}{4}$  to  $\frac{1}{2}$  square,  $\frac{1}{8}$  to  $2 \times \frac{1}{4}$ ,  $\frac{1}{2} \times \frac{1}{4}$ ,  $\frac{1}{2}$  to  $2 \frac{1}{2} \times \frac{1}{4}$ ,  $\frac{1}{2} \times \frac{1}{8}$ ,  $\frac{1}{2} \times 7 \frac{1}{8}$ ,  $\frac{1}{2} \times \frac{1}{2}$ ,  $1 \frac{1}{2} \times \frac{1}{2}$ ,  $\frac{1}{2} \times \frac{1}{2}$ ,  $\frac{1}{2} \times \frac{1}{2}$ , in lengths not exceeding 16 feet. The Collector levied duty upon that portion of the round iron less than  $\frac{1}{4}$  of 1 inch in diameter at  $1 \frac{1}{2}$  cents per pound, upon flats  $1 \frac{1}{2} \times \frac{1}{2}$  at \$22 per ton, and upon the remainder at 1 cent per pound, under the provisions of paragraphs 135 6 and 140, act of October 1, 1890. The importers claim in their protest that the round and square sizes are suitable for making rivets or screws, and are therefore rivet or screw rods within the meaning of the statute, paragraph 147, N. T. "That the flat sizes are commercially known as nail rods, and that all said iron is subject to duty at  $\frac{1}{10}$  of 1 cent per pound, under the provisions of paragraph 147, as rivet, screw or nail rod." They also allege that "none of this iron is smaller than No. 6 wire gauge, and is valued at less than 3½ cents per pound."

It appears to us that the provisions of paragraphs 135, 136 and 140, N. T., embrace all the iron mentioned, unless it is made to appear that it is rivet, screw or other iron wire rods or nail rods dutiable under paragraph 147. A member of the protesting firm testifies that the sizes  $\frac{1}{8} \times \frac{1}{4}$ ,  $\frac{1}{2} \times \frac{1}{4}$ ,  $\frac{1}{2} \times \frac{1}{8}$  and  $\frac{1}{2} \times \frac{1}{4}$  are known commercially in this country as nail rods, and that all the other sizes are commercially known as rivet, screw, fence or other iron or steel wire rods. We have made inquiries of importers, dealers and manufacturers in different parts of the country concerning the commercial designation of this iron, and have also ascertained its classification for duty at some of the principal ports of entry.

We are led to believe that the designation rivet, screw, fence or other iron or steel wire rods or nail rods, referred to in paragraph 142, relates to rods such as these protestants have imported, as shown in an invoice now before us, in which the merchandise is specifically and correctly designated as "rivet wire rods,  $\frac{1}{8}$ ,  $\frac{1}{4}$  and No. 3 round, in coils," said rivet rods being adapted for use in machines for the manufacture of rivets.

We are led to believe that the consignors of the merchandise under consideration were fully informed concerning its proper commercial designation, and we find that

the merchandise which is the subject of this protest consisted of rolled bar iron in the manufacture of which charcoal was used for fuel.

2. That the said bar iron was of the sizes, shapes and length hereinbefore specified, and that none of said iron was commercially known on October 1, 1890, as rivet or screw iron-wire rods or nail rods.

3. That all of said iron was valued at less than 3 cents per pound, and none was smaller than No. 6 wire gauge.

Upon these findings we hold that the protest must be overruled and the action of the Collector affirmed.

## THE WEEK.

California papers calculate that this year's wheat crop will yield to the farmers of the State \$25,000,000.

The new Russian tariff has been promulgated and will go into effect on July 13.

The soundest and most reputable financial organ in France, the *Economiste Français*, has denounced the Panama affair as "the greatest financial scandal of the nineteenth century," and demands the trial of the persons responsible for the absorption of 1,300,000,000 francs, snatched from the savings of small capitalists, many of whom have been ruined and numbers of whom are dead through despair.

The Brooklyn elevated railroads refuse to pay their taxes on the ground that the rate is excessive, and the Corporation Counsel hints that the alternative may be the purchase of the structures by the city or pulling them down.

Exports from Sheffield to the United States continue to decrease.

The population of Nevada is shown to be 45,761, a decrease of 16,505 since 1880. The population of Idaho is 84,385, an increase during the decade of 51,775.

The old maxim "honesty is the best policy" is verified in the case of Ex-City Treasurer Bardsley of Philadelphia, who was sentenced to 15 years' solitary confinement at hard labor in the Penitentiary. He is also fined to the amount of his confessed embezzlements.

Several large European ink manufacturers are said to contemplate establishing themselves in the United States to take advantage of the presence of carbon obtained from natural gas, which is claimed to be an invaluable ingredient.

Captain Sargent of the American steamship Ohio, in the Transatlantic trade, says the twin screw steamship needs no masts, and predicts that steamships of this character will be built hereafter without them. Masts, he says, are useful only as derricks. It is known that the builders of the City of New York hesitated about using masts and adopted them only in deference to public opinion, which perhaps was not prepared to dispense with them.

Schemes are now on foot, under a syndicate, to colonize large numbers of exiled Jews in Mexico and Yucatan.

The Louisiana sugar crop promises a larger yield than that of last year, which was the largest since ante-bellum times, the new bounty law having operated as a powerful stimulus. The applications already made are for 450,000,000 pounds of sugar, and will call for \$9,000,000 from the Federal treasury if the crop turns out anything like what it is expected. The 600 planters who have put in their applications expect to get an average bounty of \$15,000. Most of the money will go to the big planters and companies. The bounty law is also greatly

stimulating the foundries and manufacturers of machinery, and has resulted in the largest importation of sugar machinery into New Orleans ever known, mounting well up in the millions. The machinery has come mainly from France and Germany.

It is said that capitalists at the present time can pick and choose investments at 5 per cent. and over, instead of having to take what they could get at 4 and 4½ per cent. as formerly. It is not that money for investment is scarce, but that there is less anxiety to invest it, and the lender and not the borrower now dictates terms.

The drift of public opinion in Canada, if indications are correct, is expressed by Premier Mercier of Quebec, lately in Paris, who was quoted by a correspondent of the *London Times* as saying: "The time has come to consider in a very peaceful yet very serious way the right of European powers to govern people living on the continent of America, whose interests and general tendencies, commercial or other, are in certain respect opposed to those of the people of Europe. Accordingly, instead of being disposed to strengthen the ties at present existing between Britain and Canada, we are, in fact, looking forward with some anxiety to the time when we shall ask for our independence. We shall request it with all due respect to Great Britain, and without any ill-feeling toward her people, just as a young man of full age, on leaving his father's home, may sometimes do it with reluctance, but with the proud feeling that he too is called upon to take a free and independent share in life. What I say about the Province of Quebec may, I believe, be said of the inhabitants of all the other provinces. There is no party in Canada in favor of imperial federation any more than there is one in favor of annexation to the United States."

According to the returns by the Bureau of American Republics, crop prospects in Argentina are good. The wheat harvest of 1890-91 is estimated to be worth \$60,000,000, one-half of which sum would represent its export value. The quality of the wheat crop is said to be excellent, though the quantity will not exceed the average.

Annual profits ranging from \$6000 to \$8000 are reported in California this season from single groves of oranges and lemons. In one instance the gross receipts are \$14,000.

The North Chicago Elevated Railway Company, capital stock \$10,000,000, is licensed by the State to construct and operate elevated railways in Chicago to various suburbs.

An ex-iron merchant, John McAnerney, is elected to the presidency of the Seventh National Bank of this city, and James Hall, of the iron and steel firm Cooper, Hewitt & Co., becomes vice-president.

The statistician of the Interstate Commerce Commission figures up just about 30,000 locomotives in the United States, which cost in the aggregate \$450,000,000. If connected they would make a solid train 300 miles long. To every 5 miles of road there is a locomotive.

Pneumatic tubes, 8 inches in diameter, to carry the local mails through the city and under the East River, are advocated by the postmasters in New York and Brooklyn.

Australia will soon have a transcontinental line of railroad running north and south through regions recently unexplored. Of about 1000 miles remaining to be built 410 miles will be finished this year.

The failures in the Dominion since January 1 involve liabilities amounting to \$8,762,000, an increase of \$1,500,000

compared with the same time in 1890. The increase is chiefly in Quebec.

The Florida orange crop amounted to 2,600,000 boxes.

Montana has added \$20,000,000 to the assessable wealth of the State by taxing all railroad mortgages filed by railroad companies. Eastern trust companies who are directly concerned are expected to resist.

In Guatemala flour and salt are practically on the free list.

The New York State factory inspectors have just finished their work in this city and are well satisfied with the results. There is a closer conformity each year to the terms of the law, yet many changes are made necessary in the arrangement of stairways, elevators and ventilation.

It is thought that the mysterious overflow in the Colorado desert will lead to Government exploration of the Colorado and Mojave deserts, which are almost as little known as was Death Valley before the recent explorations.

The mayor of Port au Prince, who is now a fugitive in New York, says Hippolyte is undoubtedly insane, and that the most influential men in Hayti are deliberately preparing to introduce a successor. Kingston is supposed to be the headquarters of the opposition. Minister Douglass, according to the same authority, is without influence and is not expected to return to his post.

Steam power in the New York Post Office is now supplied independently of the Steam Power Company, and, as the latter is boycotted by the Knights of Labor, at least in a Pickwickian sense, report says this organization claims to have gained a victory in the change that has been made.

Dr. Gatling, the inventor of the famous machine gun, is still engaged in mechanical research. His gun is supposed to have given origin to the destructive French mitrailleuse. From a capacity of 300 shots per minute the Gatling gun, as perfected, has now a capacity of 1200 shots per minute, worked by man power. Recent experiments in the United States Navy developed the fact that there is no limit to its capacity except that of endurance of the parts.

A star, to represent the new State of Wyoming, was added to the national flag July 4, making 44 in all.

Baltimore claims that the growing importance of grain exports from that city is due solely to the energy of those merchants who solicit the business in Western markets and not at all to railroad discrimination, as has been alleged. Railroads may not discriminate.

Italy has two new cruisers nearly ready for service of 2281 tons displacement, which are expected to sail from 19 to 20 knots per hour.

Argentine foreign trade declined one-half during the first quarter of 1891 as the effects of the monetary crisis in that country, compared with the previous year. Lumber dropped in a still larger proportion. Receipts of plows, spades and similar agricultural implements diminished in the same period from \$177,000 to \$72,500. Exports in the aggregate are stationary.

A gigantic clock building in Hartford by the Seth Thomas Clock Company for the Philadelphia City Hall will have a dial 25 feet in diameter and the bell will weigh upward of 20,000 pounds.

Water has been let into the Mersey terminus of the Manchester ship canal, and by another year the city will become a seaport. The Manchester Canal is one of the very finest engineering achievements of

the century—finer, in some respects, than the most famous of them all, the Suez Canal. Just three years and eight months ago the first sod was turned.

Two officials of the Wabash Railroad have been indicted by the grand jury at Springfield, Ill., for violating the Interstate Commerce law.

English capital to the amount of \$4,500,000 has been invested in cold storage warehouses at Chicago.

A citizen of Indianapolis has been granted the right to construct a standard gauge railroad around the city of Mexico, mainly with the object of connecting all railroads entering the federal district and facilitating the transfer of freight.

A letter from London says France aims at the conquest of Siam, to compensate herself for losses sustained by the failure in Tonquin. France has occupied one of the outlying districts, and proposes to advance in expectation of diverting a portion of the trade entering Southwestern China.

The eight-hour movement is not likely to succeed on the farms in Pennsylvania. With short days the work cannot be done with the usual force, and farms must be abandoned unless machinery can be substituted for manual labor.

A canal steamer, drawing three laden consorts, has arrived at this port after a successful trial of crude oil as fuel. Fifty-five barrels of oil were consumed to 40 tons of coal on a former trip. It took her 36 hours less to make the trip with oil than when she used coal, and the expense was \$60 less.

**English vs. American Pig Iron.**—The fact that Scotch pig iron has been driven out of the Ontario market to a great extent by importations from the United States is no news to readers of the *Trade Bulletin*, but it will be interesting news to them when we state that the chances point to the probability of our importers being able to oust the American product from Ontario by bringing in the common grades of English iron, which compare favorably with the quality now being imported from the other side of the line. The recent break in Scotch warrants has evidently had a weakening effect upon Middlesboro and similar grades, which are expected to go still lower, enabling our importers to undersell American pig iron, which for some time past has obtained almost a monopoly of the Western trade.—*Montreal Trade Bulletin*.

A committee consisting of Thomas A. Hulme, G. W. Hume Craig and William C. Codd of Baltimore, have been appointed by the directors of the Smith Patent Boiler Company to sell 700 shares at \$70 per share, for the purpose of building works and manufacturing the boiler. H. Askton Ramsey of Baltimore has made a report on the boiler, his test showing an evaporation per pound of coal of 9.05 pounds, and per pound of combustible of 14.5 pounds of water. In a second test where the steam was carried off an engine, the evaporation was 11.91 pounds per pound of coal, at a pressure of 78.5 pounds from a temperature of 180° F.

The Temescal Tin Mines, near South Riverside, in California, have shipped to the American Tin Plate Company of St. Louis 38,000 pounds of American pig tin.

The East Tennessee Land Company are offering for sale at a discount from \$50,000 to \$60,000 of the stock of the Harman Blast Furnace Company of Harman, Tenn., who have begun the erection of a furnace at that point.



# The Iron Age

New York, Thursday, July 9, 1891.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.  
CHAS. KIRCHHOFF, - - - EDITOR.  
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.  
RICHARD R. WILLIAMS - - - HARDWARE EDITOR.  
JOHN S. KING, - - - BUSINESS MANAGER.

## Unanimously Conservative.

It is rather surprising that the feeling of conservatism should be so general among business men. One would naturally suppose that the excellent crop prospects, coupled with reports of poor crops abroad, would have induced considerable speculation, or that, at least, some preparations would be made to take care of the increased volume of trade thus reasonably assured. It was upon such an assumption that predictions were rather freely made in April that before the end of June a resumption of activity might be pretty safely expected; but June has passed, and July is upon us, with winter wheat nearly all harvested and with the expectations of a good crop fully realized, but the great buying movement that was to set in has not developed. The only class of business men among whom any kind of a stir has been felt are the manufacturers of agricultural implements, who never before had such a demand for their product, and were therefore obliged to purchase large quantities of raw materials.

The railroad companies are, of course, the chief delinquents in the resumption of the grand march to prosperity. They apparently will not buy any more freely to-day than in April, although to an outsider the fact appears perfectly plain that they will need additional facilities for handling this year's traffic; but their orders for rails are merely in accordance with requisitions from repair departments to cover pressing necessities, and new cars are not to be thought of as long as side tracks are full of old cars awaiting repairs. The regular annual shortage of cars which occurs in the autumn bids fair to be worse than ever this year; nevertheless, the policy of conservative expenditures is in as full effect at this late day, with a heavy traffic in immediate prospect, as it was early in the spring, when a long dull period was seen to be inevitable. Outside of railroad interests business men quite generally seem to have taken their cue from railroad managers. Even the hardware merchants in the agricultural districts of the West, who talk with exultation of the improved outlook this year as compared with previous years, shake their heads when asked to stock up a little in advance of the time when they predict almost a boom in trade. They will wait to see how their own predictions are verified to a certain extent, and with few exceptions will not take chances on the future.

This widespread conservatism, which comes to be remarkably deep rooted for

American business men, is, of course, traceable to the tightness of the money market, which has been felt in all sections of the country since the financial panic of last November. Local bankers advise their clients to go slow and not take on heavy burdens until the financial skies are a little clearer. Western merchants have also had experience in previous seasons, when they loaded themselves with stocks of goods in anticipation of prosperous times following heavy crops and found themselves sadly mistaken. They are now inclined to patiently await developments and will stock up when they see an actual demand in full force. There is, of course, some danger in following any policy when it is pursued by almost everybody. Safety lies in avoiding extremes. If the demand does come that is now so generally predicted there will be such a rush for everything that the result will be congestion in all the channels of trade and traffic. Buyers will not be able to get what they want in anything like a reasonable time. It is not well to let stocks get too low, especially when iron and steel products are so cheap as at present.

## The Charcoal Iron Makers.

Makers of charcoal pig iron have this year been hit especially hard. They have had a worse experience than their coke brethren, bad as that was. Never before has Lake Superior charcoal pig iron sold so low as during the past spring, while Southern charcoal competed with coke iron for the favor of the general foundryman, who is usually not inclined to pay premiums for quality. In the scramble for orders the makers of well-known high-grade irons fared no better than newcomers in the charcoal business, but found themselves obliged to compete wholly on a basis of price without much regard to reputation. The charcoal iron market would have been depressed under the conditions prevailing this year, even if there had been no additions to the number of charcoal furnaces, but unfortunately for the trade competition has been increased in this way. Not only had new furnaces been built last year, but in several instances old furnaces, long abandoned, were rehabilitated and put in the field.

Looking back now, it seems rather difficult to comprehend the motives of the adventurous spirits who tempted the financial fates by restoring old furnaces to a condition of activity. It is true that the production of charcoal pig iron in the country at large has shown an increase in the past 15 years, advancing from an annual average of 363,264 net tons in the five years, 1876 to 1880 inclusive to 553,346 net tons in the years 1881 to 1885 and to 596,870 net tons in the years 1886 to 1890, which might seem to indicate an increasing demand for this class of pig iron. But at the same time the cost of coke pig iron has been undergoing such a process of cheapening that it was hardly to be expected that charcoal iron would be able to successfully sustain itself except where it is regarded as absolutely essential for the

manufacturers of certain kinds of castings. The cost of producing charcoal pig iron is not so elastic as that of coke iron, and a point now seems to have been reached, particularly with Lake Superior charcoal, below which it is impossible to go with most furnaces. The difference between the market price of charcoal and coke pig iron will not sustain itself at a rate sufficiently high to give the charcoal iron makers a fair profit, and if they must sell at about the price of coke pig iron it simply means the forced stoppage of a number of charcoal furnaces.

Consumers of charcoal iron are turning more and more to the use of coke iron, and are no longer wedded to their one-time favorite. An active demand for all kinds of pig iron, if it should set in, would, of course, advance the price of charcoal iron somewhat more than the price of coke iron, on account of the preference for the former in the manufacture of malleable castings and car wheels; but with the trade depressed in all kinds of iron the charcoal makers must continue to suffer from unprofitable business. There is no outlet for them, and the only chance for the best situated makers appears to be in the gradual withdrawal from business of those who find themselves unable to compete at present rates. There is a limited market for charcoal pig iron instead of an unlimited market, and if the production can be reduced to the actual requirements of the constant consumers, the fortunate owners of charcoal furnaces then surviving will be able to get a fair return for their investment and proper compensation for their time and labor.

The alleviation of the drudgery of farming by the extensive introduction of machinery for agricultural purposes does not seem to make farm work attractive. The supply of men throughout the agricultural regions of the country is below the demand. This is the case in both the East and the West but is most severely felt in the West at present, owing to the bounteous crops which have to be secured this year. Dispatches from the James River Valley in South Dakota state that fears are entertained that a considerable portion of the crops there will be lost for lack of farm hands to take proper care of them. In Iowa farm laborers are in pressing demand at \$1 to \$1.25 per day and board, which is a remarkably high rate for a farmer to pay, being considerably more than a common laborer can earn in connection with manufacturing enterprises. This is in direct contravention of the theory that the growing use of machinery in agriculture has reduced the demand for human labor on farms. That was doubtless the case for a time, but as a controlling influence it has now lost its force, and the ranks of agricultural laborers must be recruited from the overcrowded manufacturing centers.

The Illinois Central Railroad Company have two representatives at present in South America who are looking after trade from that section with the United States.

The company's main line traverses the heart of this country, from New Orleans to Chicago, and they propose not only to secure their share of the increased South American trade which may follow the new reciprocity policy, but are doing what they can to stimulate international business. They propose to establish a fast steam service between New Orleans and ports on the Caribbean Sea and in the West Indies, operating in direct connection with their railroad line. An enterprise of this kind is a piece of practical work which will accomplish a vast deal of good in the diversion of trade to this country. With regular communication once opened, the merchants of all the countries thus joined will quickly form trade connections with one another, especially with the favoring influence of the reciprocity treaties now made or expected to be concluded before the present year expires. The manufacturers of the West have a special interest in the successful outcome of the Illinois Central's plans. They will then have a most promising chance for largely increasing their export trade.

### OBITUARY.

CAPTAIN IRA H. OWEN.

On July 2, at Oak Park, Ill., occurred the death of Captain Ira H. Owen, one of the best known vesselmen of the great lakes. Captain Owen was born at Conneaut, a little town in Ohio, on Lake Erie, 68 years ago. When 14 years of age he took to the lakes. Just before the great Chicago fire Captain Owen built the St. Clair, and began carrying iron ore to Milwaukee and Chicago. This was near the beginning of the great iron ore traffic on the great lakes, now amounting to over 7,000,000 tons a year. Captain Owen next formed the Escanaba and Lake Michigan Transportation Company, and carried for many seasons all the iron ore for the North Chicago Rolling Mills. He finally sold his steamers to the Inter-Ocean Transportation Company, controlled by the rolling mills, and engaged in general lake traffic. Besides being the principal owner of this line Captain Owen was president and main stockholder in the Delta Transportation Company, who maintain daily lines of passenger steamers from Petoskey to Mackinac Island, and from Mackinac Island to Sault Ste. Marie. At Escanaba Captain Owen had a large wrecking plant, his tugs being the Monarch, Delta and Owen. He had extensive interests in Chicago, being a large stockholder in the elevator at Rockwell street and in the Chicago Hardware Mfg. Company. Without doubt he was the largest vessel owner in Chicago, and his estate will be worth not less than \$1,000,000. He leaves two sons—William R. Owen and Ira D. Owen—both of whom had been in business with him.

WILLIAM PARLIN.

William Parlin, president of the Parlin & Orendorff Company, Canton, Ill., died suddenly on the 25th ult. Mr. Parlin seemed in the morning of that day to be in his usual health, and spent a considerable part of the forenoon at the office of the company. His death was the result of heart disease. Mr. Parlin was a native of Massachusetts and was born on January 21, 1817, being thus in his seventy-fifth year. He celebrated last summer the fiftieth anniversary of his arrival at Canton. He was regarded as one of the foremost citizens of Canton, and is referred to as one to whom more than any other belonged

the credit of developing the city. Mr. Parlin was married in January, 1845, to Miss Caroline Orendorff, who survives him. Two daughters, Miss Clara Parlin and Mrs. C. E. Ingersoll, and one son, William H. Parlin, are also living.

RUEL P. COWLES.

Ruel P. Cowles, president of the firm of C. Cowles & Co., New Haven, Conn., died at his home in that city on the 19th ult. Mr. Cowles was born in Kensington, Conn., August 21, 1829, and at the age of 16 he visited New Haven with the intention of entering college. He changed his mind, however, and decided to go into business. His brother, Chandler Cowles, had gone into the carriage hardware business with a Mr. Cornwell, under the style of Cornwell & Cowles, in 1838. In 1844, a Mr. Judson having entered the firm, the name was changed and became Judson, Cornwell & Cowles. Mr. Judson withdrew shortly afterward, however, and the old firm style was resumed. In 1851 the firm name was Chandler Cowles, and in 1855 the firm were incorporated under the present name, C. Cowles & Co. Since that time Mr. Cowles, who had entered the business in 1845, has been active in the management, serving as vice-president, secretary and treasurer, until elected to the presidency in 1877. Through his ability and judicious management the firm has become widely known and a large business has been built up, which recently necessitated the erection of new and larger shops. Mr. Cowles was connected with many organizations of a political, social, educational and religious nature, and was held in high esteem by his fellow citizens. His high character, unostentatious benevolence and other admirable qualities endeared him to many who will deeply mourn his death.

CHARLES T. BLACKWELL.

The many friends of Charles T. Blackwell, whose office was at 59 Dearborn street, Chicago, will be pained to hear of his death, which occurred very suddenly on July 4, at Chicago. Mr. Blackwell had been Western agent for over 18 years for Russell, Burdiss & Ward, the well-known manufacturers of bolts and nuts. He was a most accomplished salesman, and his genial disposition not only made friends of all who met him, but held them with hooks of steel. He possessed the rather unusual combination of manly beauty and great business ability. Few men in the trade are better known than was Mr. Blackwell in almost every section of the country. He was in the enjoyment of apparently perfect health up to the last day of his life, and in the nature of things should have had many years still before him, as he was only about 45 years old. He leaves a widow, but no children.

JOS. U. ROSE.

Jos. U. Rose, of the Hartley-Rose Belt- ing Company of Pittsburgh, died in that city on the morning of July 1. Mr. Rose was 43 years old, and was one of the best known business men of Pittsburgh.

In addition to the two mills, the Catasauqua and the Pottsville, a third mill, the Hooven, at Norristown, has been closed down on account of the refusal to sign the Eastern scale of the Amalgamated Association of Iron and Steel Workers. The Lebanon mills, which include the Pennsylvania Bolt and Nut Company, the Lebanon Rolling Mills, the West End Rolling Mill and the Lebanon Iron Company, have closed down for repairs.

The receiver of the Columbia Iron and Steel Company, at Uniontown, was discharged on the 3d inst. E. M. Butz has gone to Uniontown to start up the works.

## CORRESPONDENCE.

### The Boiler Shearings Decision.

To the Editor: The publication in *The Iron Age* of the decision of the Board of Appraisers on the duty on boiler-plate shearings confirms the prevailing belief that the hearing was *ex parte*, the importers being allowed to put in their carefully prepared case and no rebutting evidence being put in by the collectors. The idea is carefully conveyed that the object of the boiler-plate or ship-plate maker is to obtain the largest possible plate from every ingot which he rolls, and that the trimmings from the plate are only made in order to remove such portions as have imperfections and flaws. The fact is that the plate maker starts with the intention to produce a plate of the exact dimensions called for by the specification he has in hand. He selects an ingot for this purpose, noting that in the process of reduction the rolls draw the ingots unevenly, so that the final plate may be wider at one end than at the other, may be curved or may have a break somewhere in it liable to commence on one edge and work in to a greater or less extent toward the center line. In practice, therefore, it is found necessary to select an ingot from 25 to 40 per cent. heavier than the required plates. In making boiler heads, half circles and other forms an even larger allowance is made. After the sheet is rolled the plate maker marks on it not the largest perfect plate that can be sheared therefrom, but a plate of the size called for by the specification without the slightest reference to the imperfections or imperfections of the rest of the sheet. As a matter of fact the part sheared off is generally as perfect, except at the extreme edges, as that part reserved for the plate. It is not rejected except in extraordinary cases on account of any imperfections, but simply because it is a surplus not needed in the required plate, but intentionally rolled with it in order to allow a margin for accidental distortions or breaks which might arise from irregular or careless rolling, irregular heating or overheating.

It is stated in the decision that these trimmings "cannot be practically used for any purpose excepting remelting, piling or rerolling," a skillfully constructed sentence, doubtless quoted from the argument of the importers, and designed to convey the idea that remelting, piling and rerolling are all the processes included in the term "remanufacturing" as used in the tariff. The fact is that the shearings can be rerolled without either remelting or piling, that they are imported into this country for the express purpose of being so treated, and that the true distinction in treatment between billets and scrap is that the former can be rerolled without either remelting or piling and welding, while the scrap cannot, are all carefully slurred over and kept out of sight by the grouping of the words in the sentence quoted. Remanufacturing scrap is melting or welding it and reducing it to the form of billets, blanks or sheets suitable for the subsequent process of rerolling, while boiler-plate shearings do not undergo this process, but really take the place of billets and are imported for the purpose of being used as billets. They are sound, handsome, smooth, regular forms for clean new steel, generally without any imperfections, of high quality of metal, and fit to be used as a substitute for billets in the manufacture of strips, sheets and small flats, rounds and squares, hoops and bands, according as they may be sheared at the plate mill. By judicious shearing they could be made salable as bar and plate iron or mild steel within the limits of their dimensions, without any treatment whatever beyond that given



them by the shears. The decision says that "they are boiler and ship makers' waste." This is not strictly true. The better statement would be that they are a by-product incidental to the process of making a cheap article of manufacture valuable and worthy of consideration in itself.

MANUFACTURER.

#### Iron Making in Kentucky.

*To the Editor:* Having just returned from a visit to Lyon, Livingston and Hopkins counties, Ky., where I enjoyed the opportunity of seeing what was going on in the iron and coal business, I have thought that a short account of the trip might interest some of the readers of *The Iron Age*. What made the visit even more interesting was the fact that in Lyon County, at the old Suwanee Furnace, William Kelly first used the pneumatic process for refining iron. I stood upon the ruins of the furnace and secured samples of the slag made by this distinguished metallurgist while experimenting with a process which of all processes has contributed most to the welfare of humanity. The old furnace should have been preserved for the benefit of students of industrial matters. Kelly's little 500-pound converter, from which the iron was ladled and cast into molds for forge purposes, has done more for the world at large than any other invention that has marked the progress of the arts and sciences. There can be no doubt of the priority of his discovery or invention, for the whole matter was sifted when the question arose as to the patentability of the Bessemer process in this country in 1864. I had the pleasure of suggesting to the present owners of the property, the Grand Rivers Company, that Kelly's old furnace and the old converter should be restored and carried to Chicago for exhibition during the Columbian Fair. I hope it will be done, for there would be few exhibits of greater interest to iron and steel men than the first apparatus used for producing refined iron by means of a blast of air blown through molten cast iron. The old furnace was near the town of Eddyville, and the very pits from which Kelly secured his ore are now to be seen, as well as the roads he built with the slag. I have examined most of the deposits of the brown ores of that region and among them the one from which he mined most of his ore, having found it to give the best metal. The ores average about 50 per cent. in metallic iron, with from 7 to 12 per cent. of silica, the phosphorus being about 0.20 per cent. It may be that Kelly used an ore of less phosphorus than 0.20 per cent., for such an ore can be found there, and in his day was quite sufficient in amount for his purposes. But like such ores generally they vary quite widely in phosphorus, some of them giving as low as 0.04 or even 0.02 per cent., while others from the same bed run to 0.20 to 0.40 per cent. It seems to me quite likely that Kelly hand picked his ore, and secured in this way results which could not now be had, working on the large scale demanded by our modern furnaces. However this may be, the iron he made from these ores was said to be of most excellent quality, equaling the celebrated Tennessee Iron made by Hillman about that time and subsequently. It is said that Hillman offered a reward of \$10,000 for the proof that any boiler made of his iron had exploded.

It is gratifying to know that the two charcoal furnaces now almost ready to go in at Grand Rivers will use the very same ores that Kelly and Hillman used. These furnaces are among the best that have been built in this country, and, while of the nominal capacity of 60 tons, they should give not less than 70 tons per day

with good management. The forests lining the banks of the Cumberland and the Tennessee rivers on both sides will furnish a very superior fuel for many years to come. A great part of the timber is second growth, more suitable for charcoal making than first growth. I was informed by J. M. Searle, the superintendent of the furnaces, that charcoal could be laid down in the stockhouse for 4½ cents per bushel, and that he had contracted for one year's supply at this figure. It may be that the contractor will make some money out of the job, but within two years it would not surprise me to hear that the price had gone up to 6 or 7 cents. Be this as it may, there seems to be no doubt of one thing—viz., that within this district an excellent quality of charcoal iron can be made as cheaply as anywhere in this country. An abundant supply of good brown ore can be and is now mined within 3 miles of the furnaces, good limestone is now being quarried within ¼ mile of the furnaces, and good coal is now being put into the stockhouse for 4½ cents per bushel. The transportation facilities are not now as good as they should be, and as they will doubtless be made before long. At present there is only one railroad within the district, the Newport News and Mississippi Valley, from Louisville to Memphis via Paducah. But the Louisville and Nashville is only 20 miles away at Princeton, and the settled policy of this corporation is to go for freight if any assurance is given that it can be had. The Cumberland and Tennessee are both navigable for the largest boats that ply on the Ohio and Mississippi as far as Cincinnati, and a regular service extends from Paducah to and beyond Nashville and Chattanooga.

The manufacture of charcoal iron in this part of Kentucky is an old story. The manufacture of coke pig is a new enterprise. At Paducah there is now a good coke furnace, not in blast, but ready to go in when the price of iron warrants it. It will use the brown ores of this belt and Connellsville, or Flat Top coke. In Hopkins County, Ky., the Grand Rivers Company have recently opened No. 1 vein of the Kentucky series. In is said to be 4 feet and 9 inches in thickness, without any parting of importance. Some 25 tons have been coked, and the result is most gratifying to those who would like to see a good coke made from the coal in this part of the State. I have examined samples of the coke, and can say that it is very good, indeed, giving 6.45 per cent. of ash and 1.21 sulphur, with a texture that but few cokes excel. Whether or not it will hold out when made at the rate of hundreds of tons per day, of course cannot now be stated. It sometimes happens that a coal yielding good coke from an experimental lot of a few tons does not show up so well when called upon to supply two or three or four furnaces. The main trouble with the Kentucky cokes, so far as my experience and observation go, is that they are liable to run to 12 and 13 per cent. of ash and to over 2 per cent. of sulphur. This has hitherto prevented their extensive use in the blast furnace. If now it can be shown that coke from No. 1 vein will not carry over 8 per cent. of ash and not over 1½ per cent. of sulphur, with a texture that will allow of its use, there would seem to be no reason why there should not be a good demand for it. Furnaces should spring up along this belt, up and down the two rivers, and a new and more enterprising population begin to secure what nature has so bountifully provided. It takes a great deal of well timbered land to supply charcoal for these two furnaces (about 8 acres a day), so that after a while coke iron will have to be made. The quality of it may not equal charcoal iron, and will not for some purposes, but

with low silica ores and a coke of not over 8 per cent. of ash and 1½ per cent. of sulphur, a metal suitable for the basic open hearth should be made as cheaply as anywhere in this country.

This is the conclusion I have reached after spending a week in that district, and without having any interest to conserve. It seem to me that in this part of Kentucky there are offered excellent opportunities for the production of iron and steel of as good quality and at as low a cost as in any part of the country. The places where the very cheapest iron is made are few and far between, and, like the Frenchman's flea, have a celerity of transposition very puzzling to the uninitiated. It is far safer to say as cheaply than more cheaply, for then, among other thing, one avoids the invidiousness of comparison.

WM. B. PHILLIPS.

UNIVERSITY, ALA., June 26, 1891.

#### The German Patent Law.

WASHINGTON, D. C., July 3, 1891.

*To the Editor:* On the 1st of October the patent law of 1877, under which patents are now granted in Germany, will cease to have effect, and after that date protection will be afforded to inventors by two laws much more liberal than the law now in force.

The first and more important of these laws is the patent law of April 7, 1891. The provision of this law that is most important to American inventors is the second clause of paragraph 2, which provides that copies of patents officially published in the United States and other foreign countries shall not act as a bar to the grant of a patent in Germany for the same invention until three months after such publication. Under the law of 1877, now in force, the American inventor must file his application for a German patent on or before the date of issue of his American patent. It frequently happens that an inventor, desirous of protecting his rights in Germany, does not know this and allows his United States patent to issue before he decides to apply for a German patent, and when he does apply he is invariably refused. After the 1st of October, however, inventors will have three months after the issue of their patents here in which to make application in Germany. As not more than three or four weeks are required for the preparation of an application and its transmission to Germany, two months or more remain after the issue of the American patent in which to decide whether it is necessary or expedient to secure protection in Germany.

Three other provisions of the new law are of such importance as to be worthy of special attention. The first of these provides that no patent which has been in force for five years from the date of allowance thereof can be annulled for lack of novelty at the time of application. No other country furnishes such a guarantee of the validity of a patent. The second provision is that publications over 100 years old cannot be cited against applications allowable in other respects. The third provision is that a patent for an improvement on an invention patented in Germany becomes a principal patent if the principal patent is declared void. Under the present law a patent for an improvement expires with the principal patent.

In order to enable the inventors to receive protection on inventions of minor importance, a law for the protection of useful models, supplemental in its workings to the patent law, has been formulated, and will also take effect on October 1. Under this law the benefit of an invention of such nature that it would not pay to protect it by letters patent, on account of the heavy annual taxes, can be

enjoyed for six years at a comparatively small cost. This law will undoubtedly be made use of quite extensively by inventors and manufacturers who are satisfied to be protected for a short term of years, as the rights obtained are the same as granted to holders of letters patent. In fact, the law is even more liberal than the patent law, as no examination is made regarding the novelty of the invention embodied in the model.

Although it is to be noted that under the new patent law the time within which an appeal can be taken after the rejection of an application remains the same—namely, four weeks—still it is hardly probable that appeals will be necessary as often as under the present law, as the prime cause of rejection, lack of novelty, is almost entirely removed by the three months clause. The disastrous effects produced under the present law by allowing to a foreign inventor but four weeks in which to receive and reply to a notice from Germany will therefore probably entirely disappear under the working of the law soon to come into force.

The passage of these two laws marks a long step forward, and shows that Germany recognizes the importance of being liberal, not only to her own inventors, but also to those of foreign powers. American inventors will undoubtedly appreciate the importance of the changes that will be effected, as the new laws will do away with most of the drawbacks connected with the present German patent system.

C. S. CHAMPION.

#### Southern Steel.

To the Editor:—The recent articles upon the above subject are both interesting and make profitable reading, inasmuch as figures are made public and much private data given. If we could glance over the monthly cost-sheets of the different steel mills, including the one under the wing of the "leading mill manager," we would not find two alike. A number of these concerns have started out with the same lavish hand in building and equipping as proposed by "the leading mill manager," and with the same kindly consideration for the laborer, skilled or otherwise, so carefully expressed in the list of men needed to operate the plant from his standpoint. For instance, his estimate for blown metal gives \$360 as cost of labor. Taking \$2 as the average wages paid, we find that it takes 90 men per shift to do the work of 20 as practiced in successful plants of this kind. It is certainly good policy not to overstrain the 20, but to employ 70 more to assist them is humanity of an expensive character. On the same principle the leading mill manager allows \$63 for coal in this department. As this will buy 63 tons of coal, which will develop 1812 horse-power, and as 500 horse-power will do the work, there is still 812 horse-power in excess of the amount needed. The item of repairs in this department is too high; 38 cents per ton, as assumed, will amount to \$53,000 per year (310 working days in the year). As the plant costs \$100,000 this would be more than half its original cost, and every two years he would have a new plant, and the old one would be in the scrap pile. I cannot believe that such figures, however, are the result of his experience. Again, he says labor for cupola melted metal \$437. In comparison with his estimate for direct metal this is \$77 more per day, or, roughly speaking, 19 more men per turn, or 19 men to run one cupola. No comments necessary.

He doubts the capacity of the open-hearth furnaces, as set forth by Mr. Luetscher, but the latter's figures are based on actual practice and positive figures in this

particular. Witkowitz makes 17 heats with two furnaces, using blown metal liquid. Graz, using cold stock and charging by hand, makes on her 12-ton furnaces a heat every five hours. At Kladno it requires in their average working practice four hours to melt and finish a heat. If with European practice such figures are obtained, there is no reason why the pushing American metallurgist should not only equal, but surpass such results.

Nine dollars as cost of conversion in the open-hearth furnace may be correct for using cold stock and charging by hand. Pittsburgh melters, however, contract for \$2.50 per ton, they paying all the labor. But taking the \$9 as correct for a furnace making 18 heats per week, one making 30 heats would cut that figure considerably. M. Luetscher is charged with not regarding the scrap waste in blooming, and the "leading mill manager" assumes such waste to be 12 per cent. In actual practice 6 per cent. is regarded as the maximum and danger line by successful operators.

I am compelled to correct the statement made by the "leading mill manager" in regard to loss of heat by pouring the metal from one ladle into another, &c. He states that "if a heat be tapped from a cupola, poured into an open-hearth furnace, heated therein as hot as possible in, say, two hours, tapped into a ladle and then poured into a vessel, it will not be as hot as if it were poured into the vessel direct from the cupola ladle." I cannot agree with this, since it is contrary to facts, as shown by actual temperature at other works. I can suppose a case when such could be the fact. An open-hearth furnace might be so constructed as to have its gas flues partly in water, retarding its operation and reducing its temperature so as to make such a thing possible, which has happened to more than one furnace.

Taking "L. M. M.'s" cost of building and material, we find that Mr. Luetscher is much nearer actual figures. "L. M. M." calculates \$1 per square foot of ground covered. This is a pretty fair rule for an iron building, but it is too high for the purpose, as it is not necessary to have such an expensive building for the plant. Brick buildings will be much cheaper and better adapted for the Southern Steel Company, they having the clay in close proximity to their proposed site. Luetscher says \$4000 for one cupola; the cupola proper can be bought for \$1500 and \$2500 for foundations, lining, piping and erecting is more than sufficient, but "L. M. M." gives \$6000. "L. M. M." also gives too high a figure for his blowing engines; a Weimer blowing engine, 30-inch steam, 48-inch blowing cylinder and 4-foot stroke, can be bought for \$4625. This engine can be therefore safely put up for \$6000, and two of them will secure permanent running. The "leading mill manager's" \$2000 for hydraulic pipe would give 1500 feet of pipe, while only 300 feet are needed.

I see no reason why the casting shed should be built as strong as the rest of the buildings. It has to serve about the same purpose as the casting house of a blast furnace.

The direct metal and transfer ladles need no stopper rigging and can be built in Birmingham for \$300 and one ladle car for \$760; 18 ladles and 10 cars would cost here \$12,000 and not \$20,000, as he figures. The platform is included in Mr. Luetscher's cost of the building and he also included the foundations in his cost of the engines. Mr. Luetscher omitted one engine house, \$2500; one bottom dry oven, \$600; two Baker blowers with engine, \$4500; but this would only amount to \$7600, and he has an item in his estimate "unprovided for" \$14,000.

In a former part of "L. M. M.'s" article, he gives \$12,000 as cost of one open-hearth furnace, but in his estimate of cost he ac-

cepts Mr. Luetscher's figure of \$25,000. This is somewhat inconsistent. In regard to the cranes, Mr. Luetscher's figure will cover the item, as 200 ingots is all they will have to handle in 24 hours. Good steel ladles are built in Birmingham for \$350, instead of \$500. The figures for blooming mill are too extravagant, as we can verify by bids from reliable parties.

As to the cost of general items, we would like "L. M. M." to come down South and see what immense business is transacted in simple frame buildings costing not more than \$1000. We have not yet arrived at the pressed brick and brown-stone fronts for our furnace and mill offices. "L. M. M." is not aware that the Southern Steel Company will have at the doors of their steel plant excellent machine shop and foundries, which are well equipped and fully able to produce the heaviest kind of machinery at rapid speed and short notice. All that they would need would be a pipe-fitting shop and four blacksmith's fires. "L. M. M." says ten fires, which item is on a par with the \$10,000 electric plant and a \$2500 brick shed.

Mr. Luetscher's working capital of \$250,000 may be scant, but that is not in the question at all when the men who are back of this plant are known. It is no necessary nor do I believe that \$150,000 ought to be sunk in experiments. This plant will start with the light of past experience, both American and European, and therefore is in better position now than "L. M. M." thinks it would be after the first 18 months' experience.

Enough experimental work has already been done in the South and on a large enough scale to warrant the successful operation of the Ensley plant, and although "L. M. M." may not be aware of the fact, the pig iron of this district is no longer an unknown element to the practical steel melter, but has been and can still be worked successfully.

ERNST PROCHASKA,  
Met. E.

BIRMINGHAM, ALA., June 20, 1891.

#### Limestone Statistics.

The series of census bulletins on mines and mining has just received a valuable and interesting acquisition in the publication of the statistics of limestone mining. The enormous quantity of this mineral used in the working of the ores of iron from the crude into the first stages of metallurgical value and utilization in manufactures gives this bulletin special interest to that important industry. Dr. William C. Day, special agent under the division of mines and mining, says in his comprehensive report:

The production of limestone in the United States for the census year 1889 was as follows: For building purposes, 92,289,896 cubic feet, valued at \$5,405,871; converted into lime, 18,474,668 barrels, valued at \$8,217,015; stone for burning into lime, 478,082 tons, valued at \$184,024; flux for furnaces, 3,894,337 tons, valued at \$1,569,312; for street work, 46,491,623 cubic feet, valued at \$2,383,456; for bridge, dam and railroad work, 26,679,012 cubic feet, valued at \$1,289,623; miscellaneous uses, 549,875 cubic feet, valued at \$46,079; making a total value of \$19,095,179. The expenditures were as follows: For wages, \$10,121,985; for supplies and materials consumed, \$4,227,246; other expenses of quarries, \$743,483; making a total of \$15,092,714. The capital invested in the industry amounted to \$27,022,325; of this sum \$14,771,200 was in land, \$4,988,207 in buildings and fixtures, \$4,541,623 in tools, implements, &c., and \$2,721,295 in cash.

The name "limestone" carries with it the meaning "stone from which lime is made." Strictly speaking, therefore, it should apply only to the carbonate of calcium, which, by ignition, is converted into lime. The name, however, in practice covers quite a variety of materials which contain carbonate of calcium, but in very different degrees of purity. When limestone presents itself in crystalline condition, so as to be susceptible of fine polish and delicate ornamentation, it is known as marble.



Marble is specially treated of in another report, inasmuch as its beauty of texture and fine crystalline condition make it applicable to uses for which the non-crystalline variety of limestone is entirely out of question.

Calcium carbonate is frequently associated with magnesium carbonate in varying proportions. When the proportion of the latter is small the stone is called magnesian limestone, but when the proportion becomes 54.35 parts of calcium carbonate to 45.65 parts of magnesium carbonate it receives the name of "dolomite," which, if crystalline, may constitute a marble, but if non-crystalline is classed with the ordinary limestones. The term "ordinary limestone" is commonly used to include all the grades and degrees of limestone except marble, and "ordinary limestone" with this meaning is treated of in this report.

The limestones are mainly, though probably not entirely, of organic origin, resulting from the deposition and aggregation of shells, corals, &c.; but at the time of deposition other materials, such as clay, sand, iron oxides, iron pyrites, mica, &c., may have been included, thus producing a large number of grades, which are frequently distinguished by names which imply the presence of the most characteristic impurity. Siliceous, argillaceous and micaceous limestones are names in common use. Usually the presence of these impurities is an objection to the stone for almost all the great variety of uses to which limestone is applied.

Limestone of all kinds is readily susceptible to the decomposing action of acids, and this fact is very important in connection with the use of limestone as a building material or for purposes which involve its exposure to the weather. The atmosphere of large manufacturing cities is particularly liable to contain acid vapors, which, dissolved and precipitated by rain, cause rapid disintegration and defacement of limestone structures. The presence of impurities, rendering the stone absorptive and porous, are especially objectionable. Highly compact and pure limestones are less liable than other kinds to disintegration from acids, and dolomite, when pure and compact, is among the most durable when exposed to atmospheric agencies. Costly and rash experiments in the use of limestone for outside building have resulted within the last quarter of a century in causing the exercise of greater care in the adoption of limestone as building material under conditions favorable to rapid disintegration. When limestone is exposed to intense heat, such as is incident to a conflagration, the stone is to a greater or less extent decomposed into lime, and thus it is that walls built of limestone disintegrate and crumble to pieces in cases of serious conflagrations. This fact is one which should, of course, be carefully considered in the selection of limestone as a structural material.

It should be carefully noted that, in stating the amount of lime given in this report, the figures are limited to that which is manufactured by the producers of the limestone used, and do not include lime produced by lime burners, who purchase the limestone from quarrymen and then burn it into lime. The figures given in the table of production for the total value of the limestone product—namely, \$19,095,179—represent the value of the limestone quarrymen; that is, it is the aggregate value of the product sold by them, whether of the stone itself or of the products made by them from it. The aggregate value of \$19,095,179 shows the limestone industry to be greater in point of value of output than that of any other kind of stone on which a separate report has been made. Limestone used for blast-furnace flux is to a large extent quarried by the operators of the blast furnaces. Such operators as operate regularly equipped quarries have reported the limestone so quarried and used by them, so that their figures are included in the totals herein given.\*

Glancing at the purposes for which the stone is used, it appears that the value of the lime produced—namely, \$8,217,015—is the greatest. The value of the limestone itself from which this lime was made is estimated at \$1,477,974. It is important to remember in this connection that this lime was produced by the quarry operators who burned their own stone into lime, while that produced by lime burners purchasing the stone is not included here.

The item next in importance to lime in point of value is the stone used for building purposes, valued at \$5,405,671. Next follows the value of stone used for flux in furnaces, namely, \$1,569,312. For bridge, dam and railroad work the amount is \$1,289,622, and small

values are given for stone sold for burning into lime, also for stone used for miscellaneous purposes. In point of value the limestone industry is ahead of all other stone interests, granite standing second.

In the relative standing of various States, according to the different statistical items, Pennsylvania stands at the head of all lists except two. The items which contribute largely to the importance of that State are limestone converted into lime and that used for blast-furnace flux. Illinois heads the list "Total capital in land" and Maine "Total cost of supplies." The percentage of wages to total aggregate expenses is 67.07 and to total value 53.01.

## IRON AND STEEL IN GREAT BRITAIN.

The statistics collected annually for the British Iron Trade Association by its secretary, J. S. Jeans, have just been published in a neat volume, which, in some particulars, goes into more elaborate details than usual. Mr. Jeans prints the following general summary of the statistics of iron and steel in Great Britain for the year 1890, as compared with the record of the two previous years:

Description.	1890.	1889.	1888.
	Tons.	Tons.	Tons.
<b>Production:</b>			
Total production of pig iron in United Kingdom.....	7,875,130	8,245,336	7,988,634
Total production of hematite iron.....	3,044,160	3,163,063	3,180,555
Total production of basic iron.....	693,662	669,765	475,540
Total production of spiegeleisen and ferromanganese.....	195,030	177,336	205,134
Total production of puddled bar.....	1,923,221	2,253,756	2,031,473
Total production of Bessemer steel ingots.....	2,014,843	2,140,791	2,012,794
Total production of Bessemer steel rails.....	1,019,606	943,048	979,083
Total production of basic steel.....	503,400	493,919	408,594
Total production of open-hearth steel ingots.....	1,564,300	1,429,169	1,232,742
Total production of ironstone under Coal Mines act.....	8,117,476	8,270,542	8,655,082
Total production of coal.....	181,614,000	176,916,724	169,955,219
Stocks of pig iron in United Kingdom December 31.....	1,393,041	1,951,443	2,588,708
Total deliveries of pig iron.....	8,433,532	8,882,601	8,106,135
Shipbuilding tonnage launched.....	1,276,139	1,288,251	904,329
Shipbuilding under construction at December 31.....	734,010	872,967	811,468
<b>Exports:</b>			
Total exports of iron and steel from United Kingdom.....	4,001,928	4,188,388	3,966,563
Total exports of pig iron.....	1,145,268	1,190,371	1,036,319
Total exports of railroad iron and steel.....	1,035,431	1,091,919	1,020,002
Total exports of tin plates.....	418,725	430,033	391,291
Total exports of coal.....	30,130,037	28,974,129	26,968,462

**Iron Ore.**—The production of iron ore decreased 153,066 tons, declining from 8,270,542 tons to 8,117,476 tons in 1890. The principal district remains the Cleveland, which produced in 1890 5,617,573 tons. Staffordshire followed with 1,224,510 tons and Scotland with 998,935 tons. These figures refer to the ore raised under the Coal Mines act. Under the Metaliferous Mines act the production was 2,648,267 tons, while there were raised from open workings 3,015,024 tons, making a grand total of 13,780,767 tons.

The imports of iron ore showed a further increase in 1890, the total having been 4,471,780 tons, against 4,031,265 tons in 1889. Spain is the principal source of supply, furnishing 4,028,672 tons in 1890, against 3,627,646 tons in 1889. There were imported besides 140,174 tons of manganese ore, against 96,031 tons in 1889. The principal sources of supply were Southern Russia, with 77,508 tons, and Chili, with 34,271 tons.

**Pig Iron.**—The official figures show the production in 1890 to have been 7,904,214 gross tons, against 8,245,336 tons in 1889. The United States in 1890 produced, according to Mr. Jeans' figures, 1,927,573 tons more of pig iron than Great Britain, and far exceeded the highest record of the United Kingdom, which was obtained in 1882, with a total of 8,493,287 tons. The Cleveland district ranks first with an output of 2,846,089 tons, while Scotland made only 798,333 tons, against 998,928 tons during the previous year. The production of the different descriptions of iron

during the last two years is shown in the following statement:

Description.	1890.	1889.
Forge and foundry.....	4,235,172	3,942,308
Hematite.....	3,163,063	3,044,160
Spiegeleisen and ferromanganese.....	177,336	195,030
Basic iron.....	669,765	693,632
<b>Totals.....</b>	<b>8,245,336</b>	<b>7,875,130</b>

Great Britain drew quite heavily on its stocks during 1890, the decline being from 1,951,443 tons on the 31st of December, 1889, to 1,393,041 tons on the 31st of December, 1890. There was a small increase in a number of the districts, but a heavy decrease in Scotland of 422,395 tons, the Cumberland district declining also 151,667 tons. Mr. Jeans estimates a decrease in deliveries in 1890 of 449,069 gross tons, and making allowance for exports of pig iron to foreign countries, he places the consumption of pig iron in the United Kingdom at 7,692,230 tons in 1889, as compared with 7,294,684 tons in 1890.

**Manufactured Iron.**—Puddle bar production fell off last year to 1,923,221 tons, as compared with 2,253,756 tons in 1889, South Staffordshire and Worcestershire suffering most by a decline of 165,076 tons. The product was obtained from

3015 active puddling furnaces, which showed a decline of 331, while the average make per furnace in the country generally was 637 tons in 1890, as compared with 673 tons in the previous year, the reduced make being attributed to greater irregularity of working.

**Bessemer Steel.**—The quantity of Bessemer steel ingots produced in the United Kingdom in 1890 was 2,014,843 gross tons, which is a decrease of 125,948 tons as compared with the quantity produced in the previous year. The principal amount of the decrease took place in the West Cumberland district, where there was a falling off to the extent of 108,685 tons. The production of the different districts is given in the following table:

District.	Production of ingots in the year	
	1890. Tons.	1889. Tons.
South Wales.....	591,546	568,169
Cleveland.....	427,465	471,958
Sheffield.....	293,531	255,692
West Cumberland.....	349,837	458,822
Lancashire and Cheshire.....	253,300	277,020
Staffordshire, Scotland, &c.....	99,064	107,330
<b>Totals.....</b>	<b>2,014,843</b>	<b>2,140,791</b>

In 1890 the make of acid steel was 1,612,740 tons, the production of basic ingots being 402,113 tons, of which the Cleveland district made 273,476 tons. Sheffield leads with 29,573 tons and Sco-

\* In addition to the limestone quarried for blast-furnace flux, included in this report as coming from regularly operated quarries, there is a considerable amount produced by blast-furnace operators of which no complete account is kept, and consequently no statistics of such operations are given. The total value, however, of limestone used as flux is estimated at \$3,501,000.

land 99,064 tons. There was a slight improvement in the output of steel rails, which increased from 943,048 tons to 1,019,606 tons. Mr. Jeans has succeeded in obtaining within about 3 per cent. the quantities of different descriptions of the Bessemer steel produced in the United Kingdom, the following table giving the details:

Description.	Tons.
Rails.....	1,019,606
Plates.....	98,519
Merchant bars.....	173,300
Sleepers.....	45,173
Blooms and billets.....	309,258
Tin bars.....	72,530
Axles.....	1,300
Fish plates.....	6,581
Castings.....	6,946
Tires.....	26,351
Channels.....	267
Total.....	1,729,831

**Open-Hearth Steel.**—In the production of open-hearth steel ingots the United Kingdom still retains its great lead. The following table shows the make during the last two years, distributed by districts:

District.	Production of open-hearth steel ingots in	
	1890. Tons.	1889. Tons.
Scotland.....	485,164	440,065
Northeast Coast.....	469,958	437,100
Wales, North and South.	282,170	242,618
Sheffield and Leeds.....	134,864	121,747
Lancashire and Cumber- land.....	128,079	116,612
Staffordshire, &c.....	63,965	71,027
Totals.....	1,564,200	1,459,169

The quantity of Bessemer open-hearth steel made has increased somewhat, rising from 71,708 to 101,287 gross tons in 1890. There were 302 acid and 27 basic open-hearth furnaces in the United Kingdom at the end of 1890, so that during that year there was an increase of 28 acid and 10 basic furnaces, which would represent an increased capacity of production of close on 200,000 tons, assuming the average output per furnace to be 5000 tons. As a matter of fact, 262 furnaces actively at work in 1890 made an average product of 5964 tons per furnace.

**Tin Plates.**—Mr. Jeans evidently does not collect the statistics of the production of tin plates, but gives only export statistics. The following table shows the destination of the tin and black plates exported from Great Britain during 1889 and 1890:

Countries.	1890.	1890.
To United States.....	5,550,734	5,074,887
Canada and British North America.....	349,550	425,862
Mediterranean and Black Sea.....	543,935	720,188
Holland, Germany and Belgium.....	155,488	186,328
Norway, Sweden, Baltic.....	179,475	173,621
China and East Indies	94,172	95,571
France and Switzer- land.....	78,851	89,004
Australia, Tasmania, New Zealand.....	118,487	113,061
Spain and Portugal.....	145,147	122,002
Central and South America.....	137,482	130,421
West Indies.....	14,175	17,898
Cape, Ceylon and Mauritius.....	16,323	11,229
Africa and outside islands.....	5,657	16,229
Unclassed.....	3,053	4,814
Totals.....	7,401,520	7,180,815

Mr. Jeans follows with an analysis of the exports of Great Britain of iron and steel, presents statistics relating to iron and steel shipbuilding, deals with the railway requirements, and in the second part of his volume has gathered from official sources the make of iron and steel in different foreign countries.

## Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., July 7, 1891.

The Ordnance Department of the army is making decided progress in the manufacture of large caliber high-power guns. As quickly as they can be turned out they will be tested and prepared for mounting permanently.

The contracts already awarded are with the Bethlehem Company for 23 8-inch, 23 10-inch and 15 12-inch guns; with the Midvale Company for 12 8-inch, 13 10-inch and 9 12-inch guns.

The steel makers are required to deliver the forgings rough-bored and turned. The forgings will be finished and assembled at the Watervliet Arsenal.

About 11 8-inch guns were built at the West Point Foundry under outside contracts.

On Monday next, under advertisements for proposals, bids will be opened for furnishing 100 8 and 12 inch guns, rough-bored and turned, ready for assembling at the Government foundry.

The army may now be regarded as having fairly inaugurated their work in the direction of heavy guns for coast defense. It is one of the flattering evidences of the progress attained within the past few years that the forgings can now be furnished by American establishments as rapidly as required. The test of the Driggs-Schroeder rapid-firing 6-pound rifled gun at Annapolis is reported at the Navy Department as having been entirely satisfactory. The gun is designed for the secondary battery of a man-of-war.

The Navy Department has received another installment of 6 and 8 inch armor-piercing projectiles, under the contract with the Carpenter Steel Company of Reading, Pa. The tests of these projectiles have shown them up to standard and also possessing perfect uniformity of the physical characteristics which convinced the testing board of their superiority.

The contract for the two disappearing gun carriages, 8 and 10 inch guns, has been awarded to the Southwark Company of Philadelphia for about \$67,500.

### Prominent Asbestos Manufacturers Consolidate.

The H. W. Johns Mfg. Company and the Chalmers-Spence Company, New York; the Asbestos Packing Company and Chas. W. Trainer & Co., Boston, and the Shields & Brown Company of Chicago—the five largest asbestos manufacturers in the United States—have formed a corporation under the name of the H. W. Johns Mfg. Company. They will control most of the output in their line of business. The officers of all the companies and their chief employees will remain with the new concern. H. W. Johns is the president; R. H. Martin, formerly president of the Chalmers-Spence Company, the new vice-president; C. H. Patrick, treasurer, and G. P. Erhard, secretary, both of the last two named having previously been with the H. W. Johns Mfg. Company.

The H. W. Johns Mfg. Company was the name chosen for the new corporation, because the old company of that name was the pioneer in the business and had the largest factory. H. W. Johns began the manufacture of asbestos goods in 1858. Englishmen took their cue from him and have set up asbestos factories, but American manufacturers export their goods to Great Britain and elsewhere in Europe in considerable quantities.

A new works will shortly be erected at Brooklyn. Factories will also be run in

Chicago and Boston. The old H. W. Johns Mfg. Company also made asbestos fire and water proof paints and roofing—an important branch of the business—while the other concerns confined themselves solely to the manufacture of asbestos steam pipe and boiler coverings, steam packings, fire-proof cements, fabrics, ropes and twines. The new company will also be sole agent for the sale of vulcabeston, which is used largely for electrical purposes in the manufacture of switch boards, armature sleeves, battery cells and insulating parts for arc and incandescent lights, motors, &c. The manufacture of fire-proof asbestos theater curtains will be an interesting branch of the business. There are about 150 of these in use in this country, and the building laws of most of the larger cities prescribe that all new theaters must have fire-proof curtains. The major supply of asbestos comes from Canada, where the new corporation has extensive mining interests.

The new H. W. Johns Mfg. Company will have their headquarters at 87 Maiden lane, New York City. There will be branch offices in Boston, Chicago and Philadelphia, and agencies in London and elsewhere abroad.

### Trade of the Amazon Valley.

The United States Consul at Para writes respecting the trade of the Amazon Valley, which is mainly in control of English companies running steamship lines to Europe and the United States, depending upon the profits derived from the transportation of rubber. These companies do not receive any subsidies from the English Government nor from the General Government of Brazil. Each, however, has contracts with the State Government of Amazonas, but as a matter of fact no cash has yet been paid the companies, the arrearages dating back some three years. The conditions of the contract are such that practically the balance is against the steamship companies. The Booth line, which extends direct from Manaus to New York via Para, is entitled to \$24,000 per year. For this they are obliged to perform nine round-trip voyages a year between Manaus and New York until 1891; after that 12 voyages, or one per month, between Manaus and New York. They are also obliged to carry the mails free, also 3 tons of State cargo free, three first-class and six third-class governmental passengers free on each voyage.

It will be observed that the Brazilian State Government of Amazonas get a full benefit for their \$24,000 of "promise to pay." In addition to this the steamship people are required to carry all State cargo exceeding the above 3 tons at 20 per cent. reduction on their tariff rates. They are also obliged to maintain fixed tariff of freight and passenger rates, approved by the Government. The penalties are so severe and the requirements so exacting that the steamship officials do not hesitate to say that they would be better off without any subsidies.

J. C. Gray, secretary of the Philadelphia Engineering Works, Limited, has returned from an extended trip South, and is located in his new office, 86 Bullitt Building, Philadelphia.

An interview with the leading custom house officers in New York develops the fact that thus far no appeal has been taken from the decision of the Board of Appraisers in the plate shearings case.

R. H. McCaughy has tendered his resignation as superintendent of the Rock Run furnace, at Rock Run, Ala. He has been succeeded by J. M. Garvin.



## MANUFACTURING.

### Iron and Steel.

As intimated in our issue of last week, trouble has broken out at the plant of the Allegheny Bessemer Steel Company, at Duquesne, Pa., owned and operated by Carnegie Bros. & Co., Limited. The cause of the trouble is the refusal of the firm to sign the Amalgamated Association scale, which was presented to them on Monday of last week. It is stated on good authority that the strike has not been legalized by the Amalgamated Association and that the strikers will not receive the support of that body. The reason for this is that the plant of the Allegheny Bessemer Steel Company has always been operated with non-union men, and the Amalgamated Association does not feel disposed at this time to endeavor to force the firm to sign its scale. Part of the works are shut down, and it is probable that unless the matter is settled within a few days the entire plant will be closed down. At present the works are guarded by deputy sheriffs, and the strikers are not allowed to have any intercourse whatever with men at work.

The Shenango Valley Steel Company have been organized at New Castle, Pa., with a capital stock of \$200,000, all of which is stated to have been subscribed. The following are the stockholders of the new concern: W. E. Reis, Geo. Grier, Leander Raney, Jos. A. Crawford, Geo. G. Berger, J. W. Stevenson, Jr., A. M. Thompson, J. P. H. Cunningham, S. W. Cunningham, Chas. Woodward and L. S. Hoyt. Geo. B. Berger has been selected as treasurer. The new concern expect to turn out about 400 tons of Bessemer steel per day, about one-half of which will be consumed in the rod mill of the New Castle Wire Nail Company. The last named concern will have no interest in the new plant as a company, but the leading stockholders of the New Castle Wire Nail Company are largely interested in the new steel plant. Work on the erection of the plant will be commenced at an early date.

No. 2 furnace of the Blair Iron and Coal Company, at Hollidaysburg, Pa., resumed blast last week after an idleness of several months. Furnace No. 1 was also put in operation recently, and is now producing about 100 tons per day.

The Southern Steel Company of Birmingham, Ala., are considering an increase in the capital stock from \$100,000 to \$1,000,000. A meeting will be held at an early date to take action on the proposed increase.

The enlarged and remodeled Tallapoosa Furnace at Tallapoosa, Ga., was put in blast on the 1st inst., and is now working to the entire satisfaction of the owners, the Georgia-Alabama Investment and Development Company. Sufficient material is on hand to keep the furnace in operation for the remainder of the year.

The first cast at the new plant of the Norristown Steel Company, Earnest Station, Norristown, Pa., has been made, and it is expected that the entire works will be completed and ready for operation by July 15.

A fire in the Alabama Rolling Mills, Birmingham, Ala., destroyed the engine room and considerable machinery. The loss is \$20,000, covered by insurance.

The Southern Iron Company are building 12 charcoal kilns at Attalla, Ala.

The Henderson Steel and Mfg. Company of Birmingham, Ala., are making arrangements for the completion of their second furnace and the construction of a blooming train.

A great many of the iron and steel plants throughout the country are making their usual annual week to ten-days' stoppage for repairs and general overhauling.

The Otis Bros. Company of New York are erecting two iron elevators at the furnaces of the Watts Steel and Iron Syndicate, Limited, Middlesborough, Ky. The elevators are each double, 90 feet high, with platforms 9 x 10 feet, and are capable of carrying 5000 pounds.

### Machinery.

The Hardsog Mfg. Company, Ottumwa, Iowa, have been recently incorporated, with a capital stock of \$30,000. This new concern succeeds to the business of Martin Hardsog, who burned out in March last. They will make a specialty of coal-drilling machines, coal miner's tools and steel body ore and pit cars. They also control patents on many patterns of coal drilling machines and on machines for making coal augers. They will soon occupy their new factory building, which is considerably larger than the one burned, and which will be equipped with new machinery throughout.

The Enterprise Construction and Supply Company, Limited, have been incorporated at New Orleans, La., with a capital stock of \$50,000, for the manufacture of electrical and other machinery and supplies.

The Sequachee Machine Works, at Sequachee, Tenn., have been leased by the McKenney Machine Company of Baltimore, Md.

The Menasha Wood Split Pulley Company of Menasha, Wis., have just furnished a 120 inch by 2½ inch hard wood split pulley and a rope drive to the Hamilton Mfg. Company, Two Rivers, Wis., the only wood-type works in the United States.

Waring, White & Co., have perfected plans for the erection of a large foundry and machine shops at St. John, N. B. Seven buildings in all are to be erected, which will be thoroughly equipped with modern machinery for turning out all kinds of castings and machinery in the shortest possible time. The company have purchased a tract of land 400 x 300 feet, and will erect the following buildings: Machine shop, 50 x 80 feet; foundry, 50 x 70 feet; engine room; pattern shop, 30 x 30, three-stories high; a blacksmith shop; cleaning room and a wooden structure 40 x 30 feet.

A foundry and machine shop are to be built at Lunenburg, N. S., to cost \$20,000, half of which has been subscribed.

The Iron Car Works, at Duluth, Minn., will start up on the 10th inst., with a force of 300 men.

The Jones Foundry Company have been organized at Columbus, Ohio, with a capital of \$30,000.

A movement is on foot to establish a foundry at Stanberry, Mo.

The American Roller Bearing Company of Western Springs, Ill., have issued their first illustrated catalogue, showing their system applied to hangers, foot-step boxes, tight and loose pulleys, elevator boxes, pillow blocks, &c.

The Knowles Steam Pump Company, at Warren, Mass., are building a new boiler house, and work will soon begin on a 40 x 75 foot extension to the iron foundry.

The machine shops of William Dunkerly, Jr., at Paterson, N. J., have been burned at a loss of \$5000; insured.

### Hardware.

The Sterling Razor Company have been organized in Pittsburgh, and application will be made in a short time for a charter. The incorporators are A. H. Church, R. D. Nuttall, Jno. T. Wheeler, J. J. Ihmsen and H. Watts. Work on the erection of a suitable building will be commenced as soon as the preliminaries effecting the organization have been arranged.

The St. Louis Wire Mill Company, St. Louis, Mo., are having an addition made to their already extensive plant in the shape of a warehouse. This warehouse will be 130 x 180 feet, two stories in height. The foundations are already in position, and part of the first story is built. They expect to have it ready for occupancy by September 1. It will be used as a warehouse for barb wire and wire nails, and the upper floor will be utilized at no distant day for the manufacture of barb wire. They will run a switch in by the warehouse, and will build platforms so as to facilitate the handling of their product in shipping. The cost of this improvement will be \$25,000.

### Miscellaneous.

The works of the recently organized Bostwick Steel Lath Company, at Niles, Ohio, were put in operation last week. The new concern occupy a building 40 x 102 feet, made of corrugated iron, and have a capital stock of \$100,000, and are composed of the following persons: R. G. Sykes, Niles, Ohio, president; Geo. B. Tyler, Warren, Ohio, vice-president, and W. G. Hurlbert, formerly of Toledo, secretary. It is stated that the new firm have already enough orders on hand to require their capacity for 60 days. They expect to turn out about 15 tons of material daily.

Natural gas and oil have been discovered near San Antonio, Texas, and the San Antonio Natural Gas and Oil Company have been organized, with a capital of \$2,000,000, to distribute the supply for heating and illuminating purposes. There are seven wells in all, from 300 to 1200 feet deep, and the pressure of gas is from 50 to 200 pounds per square inch confined.

The Mary Lee Coal and Railway Company of Birmingham, Ala., have just completed 100 coke ovens at Lewisburg, 6 miles from Birmingham.

The strike at the New Jersey Zinc and Iron Works, Newark, N. J., is still on, this being the third week of the trouble.

The establishment of car works at Beaumont, Texas, has become an assured fact, the necessary papers having been signed by the contracting parties. The citizens of Beaumont grant a bonus of \$50,000 to Eastern capitalists, who will build and operate works employing 500 men, the paid-up capital stock of the company to be \$500,000. Negotiations have been pending for some time and the settlement of the affair means additional prosperity for Beaumont.

The Huntingdon Mfg. Company, Huntingdon, Pa., have closed their works and there are no prospects of an early resumption. The company are controlled by the Iron Car Equipment Company of New York, who have found it necessary to take this action owing to a lack of orders. There is some talk of the plant being removed to some point in Tennessee.

Some time since the Rogers Locomotive Works of Paterson, N. J., completed two ten-wheel freight engines for the Illinois Central Railroad, the engines being somewhat experimental. These have proven so satisfactory, however, that the railroad company have ordered 20 additional locomotives, which will be built at once on the same lines as the experimental machines.

It is announced that a party of Philadelphia capitalists, among them Albert Murphy of the Conshohocken Tube Works, will shortly visit Duluth, Minn., and vicinity, with a view to establishing tube works in that territory.

The Gouverneur Steel Roller Mfg. Company will remove their works from Gouverneur to East Geneva, N. Y.

The Elmira, N. Y., Board of Trade is raising a new subscription fund of \$50,000 or more to be available from time to time to obtain funds necessary to secure manufacturing industries for the city.

The Rail Lock Joint Company of Poughkeepsie, N. Y., recently formed and controlled by men prominent in railroad circles, have elected Thomas J. Swift of Poughkeepsie president. Mr. Swift is the owner of one-third of the capital stock of the company, which is \$250,000.

The facilities in the repair shops of the Delaware and Hudson Canal Company's plant at Whitehall have been greatly increased of late.

The new building for the Niles Iron and Steel Company's new plant at Niles, Ohio, is progressing very rapidly, and will soon be entirely inclosed.

The War Department has approved plans for a bridge across Newark Bay, N. J., for the Jersey City, Newark and Western Railway Company. It is to have two draw openings, each 100 feet wide in the clear, and the draw spans are to be 8 feet 5½ inches above mean high water. The Government demanded 26 feet originally, as was decided in the Baltimore and Ohio Bridge over Arthur Kill.

It is announced that the Tripp Mfg. Company of Boston have decided to locate new works at South Framingham, Mass. The company have a capital of \$250,000, and will erect a factory 240 x 60 feet, contract for which has already been let.

Henry H. Cust, who has been connected in a responsible position for several years with the Springfield Iron Company of Springfield, Ill., has been elected secretary of the company, to succeed Franklin Ridgely, who proposes to remove to Oklahoma.

In order to give different woods the appearance of cherry, says an English paper, proceed as follows: Take common yellow ocher, getting the dark shade. Break it in water, add a little stale beer, and stain the wood with this for the first coat. Sandpaper lightly, to cut where the grain may have risen, then have some good red lake, ground in distemper for common work, but for better work in turpentine only, and add a few spoonfuls of drying japan, according to the quantity to be used, merely to bind it to the wood, and no more, wiping away all surplus, then shellac and varnish or oil. If you need something very fine, use a common grade of Munich lake. This will make the cherry now being used so extensively on furniture and house trimmings. Try it, and you will like its richness, especially when polished.

# TRADE REPORT.

## Chicago.

(By Telegraph.)

Office of The Iron Age, 50 Dearborn street,  
CHICAGO, July 8, 1891.

The Pig Iron market here is gradually working in favor of sellers, but manufactures of Iron and Steel are in less satisfactory shape. The stoppage of numerous rolling mills throughout the country has not stiffened prices for rolled products, which are still to be had at very low rates. Some ground for encouragement is had in the starting up on Steel Rails of the Union Works of the Illinois Steel Company, all of whose mills are now in operation.

**Pig Iron.**—Dealers report a fair volume of business. Transactions are not large, a very few sales of 500 to 1000 tons being reported, but orders continue to come in from unexpected sources in sufficient quantity to sustain the market. An excellent demand exists for Softeners for quick shipment, and sales of Ohio Silveries have been made to a few large consumers for scattered deliveries. Local Coke Iron is a little firmer, and quotations are slightly advanced. Southern is by no means weak, as it was, and some grades are quite scarce. Even Lake Superior Charcoal cannot be had at the prices ruling last month, and the low sellers appear to have sold all they care to at present. The conclusion seems irresistible that at last the weak spots have been eliminated from the market, and it is in good shape to respond quickly to any improvement in the demand. We quote for cash, f.o.b. Chicago:

Lake Superior Charcoal.....	\$17.50 @ \$18.00
Local Coke Foundry, No. 1.....	15.50 @ 16.00
Local Coke Foundry, No. 2.....	15.25 @ 15.50
Local Coke Foundry, No. 3.....	14.75 @ 15.00
Local Scotch.....	16.00 @ 16.50
Ohio Strong Softeners.....	18.00 @ 18.50
Southern Coke, No. 1.....	16.00 @ 16.50
Southern Coke, No. 2.....	15.00 @ 15.50
Southern Coke, No. 3.....	14.50 @ 15.00
Southern, No. 1, Soft.....	15.25 @ 15.75
Southern, No. 2, Soft.....	14.50 @ 14.75
Southern Gray Forge.....	14.00 @ 14.50
Southern Mottled.....	13.50 @ 14.00
Tennessee Charcoal, No. 1.....	18.00 @
Alabama Car Wheel.....	21.50 @ 22.50
Coke Bessemer.....	17.50 @ 18.00
Hocking Valley, No. 1.....	17.00 @ 18.50

**Bar Iron.**—Mill business is light. No car specifications are in the market, although the car builders are figuring on a few inquiries which they hope will develop into business. The general demand is rather quiet, but the manufacturers are maintaining quotations in the expectation that a better condition of trade will soon spring up. Prices named are 1.67½¢ @ 1.70¢, half extras, Chicago, for either local or Mahoning Valley brands.

**Structural Iron.**—The Phoenix Iron Company have secured the contract for the Iron Beams for the Cook County Abstract Building. Carload lots of Steel Angles are now quoted at 2.10¢ to 2.15¢ at Chicago; Universal Plates, 2.15¢ @ 2.20¢; Sheared Plates, 2.30¢ @ 2.40¢; Tees, 2.60¢ @ 2.70¢; Beams, 3.20¢.

**Plates.**—The inquiry for Tank Steel is large, but buyers are slow to place heavy contracts. Sheared Steel Plates are being offered at very low prices by Eastern mills, whose desire for orders seems greater than Western makers'. The Boiler trade is lighter, but dealers' quotations are unchanged.

**Sheets.**—There is a fair trade in Black Sheets for August delivery, but prices are no stronger than they have been. Galvanized Iron is usually in heavy demand at this time of the year, but now only a moderate trade is doing and prices still rule low.

**Merchant Steel.**—Mill business lately has been confined almost entirely to the agricultural people, whose wants are in excess of any former year owing to the prospects for heavy crops. Two or three contracts were under negotiation, but there is likely to be a lull now for a month or so. Prices show no change, carloads being quoted as before—viz.: 2.30¢ for Machinery Steel, 2.40¢ for Open-Hearth Spring, 2.30¢ for Tire and 2¢ for Bessemer Bars, all from good stock. Tool Steel sells at 7¢ @ 7½¢ and upward, according to quality.

**Track Supplies.**—The Steel Rail trade has shown no marked activity, but the gradual accumulation of small orders has at last enabled the Illinois Steel Company to start up their Union Works and now all the Rail mills here are again in operation, with good prospects of a steady run for some months. Prices are unchanged, the bottom rate for most desirable orders being \$31, while small sales are made at \$1 to \$2 advance. Splice Bars are quoted at 1.80¢ @ 1.90¢; Spikes 2.15¢ @ 2.20¢; Track Bolts with Hexagon Nuts, 2.80¢ @ 2.90¢.

**Old Rails and Wheels.**—Several lots of Old Iron Rails have been offered, but consumers are supplied for the present, and dealers are speculating, so that transactions are light. Quotations are nominal at \$23 @ \$23.25. Old Steel Rails are worth \$14.50 @ \$16.50, according to length and width. The supply is greater than the demand. Old Car Wheels are getting quite abundant, and small sales are reported at \$16 @ \$16.50.

**Scrap.**—The only movement worth noticing is in Wrought Iron and some grades of Steel Scrap. Everything else on the list is very quiet. Dealers' selling prices are unchanged. We quote as follows, per ton of 2000 pounds: No. 1 Railroad, \$19; No. 1 Forge, \$18.50; No. 1 Mill, \$14; Fish Plates, \$21; Axles, \$23; Pipes and Flues, \$13; Horseshoes, \$18; Cast Borings, \$8; Wrought Turnings, \$11.50; Axle Turnings, \$13; Machinery Cast, \$12; Stove Plates, \$8.50 @ \$9; Mixed Steel, \$11; Coil Steel, \$14.50; Leaf, \$15.50; Tires, \$16.

**Metals.**—Casting Copper is holding quite firmly to the recent advance, carload lots being now quoted at 12½¢ @ 12¾¢, while Lake stands at 13¢. Spelter is quoted at 4.95¢ @ 5¢ for prime Western. Trade in Pig Lead has been limited, but values have been firm at 4.30¢, 4.35¢ and 4.40¢ asked, with very little offering. The average price of Desilverized for June was 4.35¢.

Park Bros. & Co., Limited, will hereafter handle their Steel Plates themselves in Chicago, instead of selling them through a Plate house. They have secured a warehouse at 66 and 68 South Canal street, with railroad facilities, to reduce the cost of transportation to and from the warehouse. The location is in the heart of the manufacturing district and convenient to the principal boiler shops. The office will be continued as heretofore at 243 Lake street, in connection with their Bar Steel and Copper warehouse.

## Cincinnati.

(By Telegraph.)

Office of The Iron Age, Fourth and Main Sts.,  
CINCINNATI, July 8, 1891.

**Pig Iron.**—There has been no essential change in the general features of the trade during the past week. Many of the mills are idle, operations having been suspended on account of hot weather or for repairs; pipe works are running on reduced time, and repair shops have not started up with vigor, so that there is no large melting of

Iron and the trade seems to be reduced to its lowest terms. Almost the only demand is for carload lots of Iron, and they are not numerous, but there is no urgency to sell, such as would be likely to affect prices, and while \$10 at the furnace is the ruling price for Gray Forge for any delivery this year, it would be difficult to obtain any essential concession from this figure. Some difficulty has been experienced in getting prompt deliveries of No. 1 and No. 2 Foundry Iron from the furnaces on present contracts, but there is plenty of No. 3 Foundry and Forge Iron available. Charcoal Irons are especially dull and freely offered. Settlements are the order of the day at this season, and they are effected with more difficulty than is agreeable, there being much complaint of stringency in the money market. Some of the furnaces in the South, especially in Birmingham district, have been so improved that they yield better results with a larger proportion of foundry grades, and are improved in quality generally, so that when the increased demand, which is confidently predicted, comes, there will be a more satisfactory outcome. Quotations are unchanged, as follows:

Foundry.	
Southern Coke, No. 1.....	\$14.75 @ \$15.00
Southern Coke, No. 2.....	13.75 @ 14 00
Southern Coke, No. 3.....	13.25 @ 13 50
Ohio Soft Stone Coal, No. 1.....	16.50 @ 17 00
Ohio Soft Stone Coal, No. 2.....	15.50 @ 16 50
Mahoning and Shenango Valley.....	17.00 @ 17 50
Hanging Rock Charcoal, No. 1.....	20.00 @ 21 00
Hanging Rock Charcoal, No. 2.....	19.00 @ 20 00
Tennessee and Alabama Charcoal, No. 1.....	16 00 @ 17 00
Tennessee and Alabama Charcoal, No. 2.....	15.00 @ 16 00
Forge.	
Gray Forge.....	12.75 @ 13 00
Mottled Neutral Coke.....	12.25 @ 12 50
Car Wheel and Malleable Irons.	
Standard Southern Car Wheel.....	19.25 @ 19 75
Hanging Rock, Cold Blast.....	25.00 @ 26 00
Lake Superior Car Wheel and Mal- leable.....	18.00 @ 18 50

## Philadelphia.

Office of The Iron Age, 220 South Fourth St.,  
PHILADELPHIA, Pa., July 7, 1891.

Business has been practically suspended since date of our last report, so that there are no new features. Prices are nominally unchanged, but buyers show no desire to make bids for large lots, and the chances appear to be that sellers will have to offer inducements before any large amount of business can be done. Dullness at this season is what the trade usually expect, however, so it might not be entirely safe to assume that the dullness is a necessary preliminary to lower prices, although it would be more encouraging if there were some signs of a desire to place orders. But the disposition is to wait developments, and there is probably nothing to be gained by attempts to force the market.

**Pig Iron.**—The best brands of Foundry Irons appear to be well taken up, so that there is no difficulty in marketing the current output at full quoted rates. Good Mill Irons are also fairly steady at \$14.75 @ \$15, delivered, but anything not strictly up to grade is hard to place at any reasonable price. There is a market for just so much Iron, and no more, and when that is satisfied prices begin to be very irregular—that is to say, Iron that must be marketed regardless of buyers' preferences can hardly be quoted, as there is absolutely no demand beyond what we have mentioned, unless at prices far below the general market. On the other hand, it is equally true that there is no immediate pressure of that kind, although sellers are watching for opportunities, as recent accumulations in some cases are beginning to be a little cumbersome, so that bids for round lots are anxiously looked for. But in the absence of demand, holders understand that there is nothing to be gained by too much urgency, hence they are biding their time until offers of some kind can be had for



large lots. In a small way sales are being made at about the following prices, delivered:

Ohio Softeners, No. 1x	\$19.00	@	\$18.25
Ohio Softeners, No. 2x	18.00	@	18.00
Standard Penna., No. 1x	17.75	@	17.50
Standard Penna., No. 2x	16.50	@	17.00
Medium Penna., No. 1x	17.25	@	17.50
Medium Penna., No. 2x	16.00	@	16.25
Virginia, No. 1x	16.75	@	17.50
Virginia, No. 2x	15.75	@	16.00
Standard Neutral All-Ore Forge	14.75	@	15.25
Ordinary Forge Cinder mixed	14.00	@	14.25
Hot-Blast Charcoal	23.00	@	22.00
Cold-Blast Charcoal	24.00	@	27.00

**Bessemer Iron.**—There is a little more urgency, but not much business to report as yet. Makers quote \$17 @ \$17.25 at furnace for standard Bessemer, or \$19 @ \$19.50 for special brands.

**Ferromanganese.**—There is some inquiry for 80 %, for which \$64 @ \$64.50 is quoted, duty paid.

**Steel Billets.**—Market very inactive. Sellers appear to be firm at from \$28 to \$28.25 delivered here or at points nearby, and about 50¢ less for deliveries more toward the interior, but we cannot hear of any business being done within the past few days. Price does not appear to be the objection so much as the fact that consumers are supplied for the present, and are, therefore, not bidding for additional quantities.

**Steel Rails.**—Business is in such a monotonous condition that prices cannot advance, and with the continued good understanding among manufacturers, it is equally futile to expect them to decline, hence \$30 at mills may be regarded as a standing quotation.

**Muck Bars.**—Holders are firm at \$26.75 @ \$27 at their mills, but consumers appear to have all they are likely to require for the current month, hence there is little or no inquiry. The feeling is quite firm, nevertheless, and it would not take much of a demand to cause a further stiffening. Last sale reported was at \$27.25, delivered.

**Manufactured Iron.**—As most of the mills are closed, and with the uncertainty in regard to resumption as regards several, there is not much disposition to push business. Orders at prices recently ruling would be promptly accepted, but as buyers are not in the market to any extent it is a practical stand off on both sides. It is difficult to form an opinion as to the outcome, although if there should be a protracted suspension of work prices ought to stiffen a little. If, on the contrary, there is a general resumption within the next couple of weeks it will not be easy to maintain the rates recently current. There is no large amount of business immediately in sight, although the general outlook seems to be favorable and to warrant expectations of a very heavy demand during the fall months. But delays and postponements have been so frequent of late that no one feels sure of anything until the work is actually in hand. A good deal depends on the financial position, and if money works easier there is reason to expect a very heavy business. Meanwhile there are so many contingencies to be taken into account that few people are willing to do anything but wait developments, accepting such hand-to-mouth business as can be secured at about the rates recently ruling, say 1.75¢ @ 1.85¢ for Best Refined Bars, 2.00¢ @ 2.10¢ for Plates and Angles and 10¢ to 15¢ more for the same specifications in Steel. On large orders these figures would probably be shaded a little, but all depends on circumstances.

**Wrought-Iron Pipe.**—There is a very fair demand for Pipe, but prices are irregular and unsettled. A meeting of the manufacturers is to be held on Thursday, at which time it is hoped that something will be done to bring about more uniform-

ity. Meanwhile discounts are nominally:

Butt-Welded Black	55 %
Butt-Welded Galvanized	45 %
Lap-Welded Black	65 %
Lap-Welded Galvanized	52½ %
Roller Tubes, 2½ inch and under	55 %
Boiler Tubes, 2½ inch and larger	60 %

## Pittsburgh.

Office of The Iron Age, Hamilton Building, 1  
PITTSBURGH, July 6, 1891.

**Pig Iron.**—There has been no important change in the situation during the week just closed. There is not possibly the activity noted a few weeks ago, nor is it to be expected in view of the fact that it is customary with a good many of the mills to stop during the first week or two in July to take stock and make repairs. However, while the demand is possibly not so active, there is no indication of weakness; on the contrary, the feeling on the part of furnacemen is one of increasing strength and many of them are now indifferent about making additional contracts at present prices. It is also worthy of mention in this connection that nearly all the city furnaces are sold up for July and August and the same is true of a good many of those in the Shenango and Mahoning valleys, and this being the case, there is but little Iron offering; moreover, valley furnacemen are still able to do much better at home or elsewhere than in this market and there is very little valley Iron offering here in consequence. Prices remain just as quoted a week ago:

Neutral Grav Forge	\$14.00	@	cash
White and Mottled	13.00	@	12.50
All-Ore Mill Iron	14.50	@	15.00
No. 1 Foundry	15.50	@	17.00
No. 2 Foundry	15.50	@	16.00
No. 3 Foundry	14.75	@	15.00
No. 1 Charcoal Foundry	22.00	@	22.50
No. 2 Charcoal Foundry	21.00	@	21.50
Cold-Blast Charcoal	25.00	@	25.00
Bessemer Iron	16.10	@	16.00

In regard to Bessemer Iron there is nothing especially new to note, with the exception that there is not so much doing. Some valley Bessemer is being re-offered for sale by a mill closed down by a strike. Furnacemen are well sold up and consumers pretty well covered. Forge Iron is firmer, with an increasing inquiry, and some furnacemen are now refusing to make additional sales at present prices. There is very little being said in regard to Southern Iron, and very little of it being sold in this market of late. Forge Iron from the Sheffield (Ala.) district cannot be put here by rail much, if any, below the price obtaining for city Irons. Transportation by water is cheaper than by rail, but river transportation is very unreliable at this season of the year, and very few shipments are now being made by water. As stated in our report some time ago, Southern Irons cannot be sold here in competition with home Irons unless the price is made an object, as consumers prefer the latter, and in order to effect sales of the former it has to be offered at a considerably less price than home-made Iron. Good brands of this Alabama Forge Iron cannot now be laid down here by rail at the price obtaining for city Iron, and it is pretty well shut out of this market by reason thereof. There is no prejudice against Southern Iron in this market; consumers here would just as soon have it as that from the Mahoning or Shenango Valley districts, if they can buy it for less money.

**Muck Bar.**—There is considerable inquiry and the market is firm, but prices remain unchanged at \$26.75 @ \$27. There is nearly always an increased demand at this season of the year, when a good many of the mills are forced to buy, as their output is reduced by reason of the heat. Many country mills are working exclusively on Muck Bar, being furnished with Pig Iron, and get a specified price for converting. It is claimed that at present prices the margin for profit is small.

**Manganese.**—We can report regular sales of 80 % domestic Ferromanganese at \$66.50, cash, mainly for immediate or near-by delivery. Foreign cannot be put here at the price quoted, and the Carnegie interest for the time and for several months past has had a monopoly of this market.

**Manufactured Iron.**—There is a fair business, which it is expected will be increased as the season becomes more advanced. Now that good crops are assured it is expected the railroads will be free buyers before long; that in addition to making extensive repairs and improvements they will be obliged to increase their rolling stock, which means a considerably increased consumption both of Iron and Steel. Moreover, it looks now as if labor complications were about over for this year, the effect of which cannot but be favorable. Prices remain as quoted a week ago: City Made Iron, Bars, 1.65¢ @ 1.70¢; Tank and Plate 2.10¢ @ 2.15¢; No. 24 Sheet, 2.75¢ @ 2.80¢, all 60 days, 2 % off for cash. There is an increasing demand for Skelp Iron, but prices show no improvement; Grooved, 1.62½¢ @ 1.65¢; Sheared, 1.85¢ @ 1.90¢, four months, 2 % off for cash. There are but few sellers now at outside prices.

**Nails.**—The Cut Nail trade is reported a little more active, but prices show no improvement. We continue to quote at \$1.55 @ \$1.60, 60 days, 2 % off for cash, for large orders of a desirable character. Some makers are reported as having stiffened up, while others still evince a willingness to sell at prices quoted. Wire Nails continue firm with the makers well sold up, and while we continue to quote at \$1.95 @ \$2, there are now but few sellers below \$2, 60 days, 2 % off for cash, f.o.b. at factory. Some makers well sold up are refusing to take additional orders at highest price quoted, but jobbers have, we apprehend, no difficulty in supplying themselves within our quotations. It begins to look very much as if the Wire Nail was destined, sooner or later, to supplant the Cut Nail. Here in Pittsburgh we have three Wire-Nail factories, whereas there is not a single Cut-Nail machine in operation.

**Wrought-Iron Pipe.**—This important interest continues in an unsatisfactory condition; business continues light for the season of the year, but it is hoped and expected that it will improve as the season becomes more advanced; there is nothing like the business there was at this time last year. Prices remain unchanged. Discounts on Black Butt Pipe, 55 %; on Galvanized do., 45 %; on Black Lap, 65 %; on Galvanized do., 52½ %; Boiler Tubes, all sizes up to 2½ inches, 55 %; 3 to 6 inch inclusive, 65 %; 7-inch and upward, 55 %; Casing, all sizes, 55 %. The regular monthly meeting of the Manufacturers' Association takes place on Thursday next at the Fifth Avenue Hotel, New York, and it is expected that prices will be advanced.

**Structural Material.**—There is an increasing inquiry, which it is hoped and expected will lead to something more tangible in the near future. Moreover, now that the carpenter's strike is over and the work of building recommenced after a suspension of about nine weeks, there will, no doubt, be a considerable increased local business, although many of the large contemplated improvements will now go over until next year. The World's Fair buildings at Chicago will require a great deal of Structural Material and Pittsburgh expects to get her share of the same. Prices remain unchanged: Channels and Beams, 3.10¢; Angles, 2¢; Steel Sheared Bridge Plates, 2.10¢ @ 2.15¢; Universal Mill Plates, Iron, 2.05¢; Refined Bars, 1.80¢ @ 1.85¢.

**Merchant Steel.**—There has been little or no change in the situation the past week. Business continues slow, while prices remain unchanged: Crucible Tool Steel, 7¢ @ 7½¢; do., Spring, 4¢; do., Machinery, 4½¢ @ 5¢; Bessemer Spring Steel, 2.50¢; do., Machinery, 2.40¢ @ 2.50¢; Toe Calk, 2½¢; Tire Steel, 2.20¢; Steel Bars, 1.85¢ @ 1.90¢ rates, full extras.

**Steel Plates.**—The dullness noted in our last report continues, but it is hoped and expected that there will be an early improvement in the demand before long. Prices easy and we have made some slight reductions in our quotations: Tank, 2.10¢; Shell, 2.40¢; Flange, 2.60¢; Fire-Box, 3.90¢ @ 4.25¢.

**Railway Track Supplies.**—Dilworth, Porter & Co. have advanced the price of Spikes to \$2.10, 30 days, f.o.b. at works. Splice Bars remain unchanged at 1.80¢ @ 1.90¢; Track Bolts, 2.75¢ with square and 2.85¢ with hexagon nuts. There is a very full and increasing demand for nearly all kinds of Railway Track Supplies.

**Old Rails.**—There has been more business in Old Iron Rails the past week, but no improvement in prices; sales at \$23 to \$23.25. Old Steel Rails continue in very good demand with sales at \$17.50, and \$18 @ \$18.50 for short and long pieces.

**Billets and Slabs.**—There is continued inquiry for Billets, with mills both here and at Wheeling well sold up for this month and next. We continue to quote at \$25.50 @ \$26, f.o.b. at makers' mill, according to character of order and delivery.

**Wire Rods.**—There does not appear to be much doing, and in the absence of sales we continue to quote at \$36 @ \$36.50, f.o.b. at makers' mill.

**Steel Rails.**—There is a fair business, but no change in prices, \$30, f.o.b. at mill. The mill at Duquesne owned by the Carnegie interest (formerly the Allegheny Bessemer) has shut down, and it is the evident intention of the owners to make it a non-union mill.

**Old Material.**—There is a fair demand for No. 1 Railroad Wrought Scrap, with sales at \$19 ½ net ton; Cast Scrap also in freer request, with sales at \$14, gross ton. Most dealers report trade very dull, but look for an early improvement.

**Connellsville Coke.**—There is a fair business and the demand is increasing by the starting up of additional furnaces. No change in prices.

(By Telegraph.)

There is no truth in the report which appears to have originated in New York that the firm of Carnegie & Co. of this city had bought 130,000 tons of Bessemer Iron. Your correspondent here is authorized by the firm in question to deny most emphatically the report. They bought considerable during April and May, but nothing like the quantity named. During June and thus far this month their purchases have been exceedingly small.

## Detroit.

WILLIAM F. JARVIS & Co., Detroit, Mich., under date July 6, say: The activity which we noted in our report of last week was fully maintained up to the end of the month, and the volume of business in Lake Superior Charcoal for June will certainly be a large one. There is, however, a very uncomfortable monotony in low prices. The increased output of all of our furnaces, which is the cause of the overstocking this year of Lake Superior Charcoal Iron rather than the lack of de-

mand, which certainly has been about as much as in previous years, has caused a piling up of stocks of sufficient amount at the furnaces to make the sellers fearful of losing orders by advancing prices. This is particularly true of what may be termed summer furnaces, whose stocks must necessarily be removed during the summer months, or else in many cases carried over until the opening of navigation the following spring. But with the prospects of a large crop and with the continued demand and inquiry that there is to-day, it is to be hoped that some better prices may be asked and obtained a little later on. Northern Coke Irons are showing considerable activity in our local market and obtaining some good sized orders. We hear of no transactions in Southern Iron of record during the past week. Altogether the trade may be said to be fairly good, as far as demand is concerned, at normally low prices. We repeat quotations of a week past, as follows:

Lake Superior Charcoal, all numbers	\$18.00 @ \$18.50
Lake Superior Coke, Bessemer	18.00 @ 18.50
Ohio Blackband (40 per cent.)	18.00 @ 18.25
Lake Superior Coke Foundry, all ore	18.00 @ 18.50
Southern No. 1	16.25 @ 16.50
Southern Gray Forge	14.00 @ 14.50
Jackson County (Ohio) Silvery	18.00 @ 18.50

## St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st.,  
St. Louis, July 6, 1891.

**Pig Iron.**—A review of the market for the past week fails to show any change worthy of note. Extreme apathy prevails, and agents report sales only of carloads. Orders for larger quantities than these are difficult to obtain. Furnacemen cannot well afford to push sales to any extent, as once the buyer suspects that the furnace is anxious to sell, his opinion of what the Iron is worth materially decreases. While there are no large stocks of Iron on hand, consumers have bought far enough ahead to enable them to discount the future from 60 to 90 days. While these circumstances prevail, it is difficult to see where higher prices are to originate. The consumptive demand is steady, and manufacturers are as a rule kept fairly well employed. There is, however, no special work offered, as they had last year, such as Cable Yokes and work of a similar nature, and under these circumstances there are no large quantities of Iron changing hands. Car Wheel manufacturers are not working to their full capacity, thus causing a lull in the demand for Car Wheel Irons; in fact, there is more or less complaint from all directions regarding lack of trade. Money is not as easy as the trade would like, although this is partially explained by the fact that the banks are husbanding their resources in preparation for the moving of the crops. All these circumstances have their influence on the Iron trade, and just now this influence is depressing in the extreme. The splendid crop outlook is looked for to relieve matters, but even in this direction we are likely to be disappointed. It is one thing to have the crop in sight and another to have the money for the same find its way into circulation. Looking at the matter from a conservative standpoint, it is fair to assume that values will improve later in the year, but if prices at present ruling continue the trade at large will be satisfied. Prices are fairly well maintained at about the following quotation, for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry	\$15.50 @ \$15.75
Southern Coke, No. 2 Foundry	14.50 @ 14.75
Southern Coke, No. 3 Foundry	14.00 @ 14.25
Gray Forge	13.00 @ 13.25
Southern Charcoal, No. 1 Foundry	17.75 @ 18.25
Southern Charcoal, No. 2 Foundry	16.75 @ 17.25

Missouri Charcoal, No. 1 Foundry	15.50 @ 16.00
Missouri Charcoal, No. 2 Foundry	15.00 @ 15.50
Ohio Softeners	17.50 @ 18.75

**Bar Iron.**—Mills continue to receive a fair amount of trade on the basis of 1.70¢ @ 1.75¢, delivered at cars at East St. Louis. Jobbers report a steady demand at from 1.82½¢ to 1.87½¢ from store.

**Barb Wire.**—Local mills are not overburdened with orders, and prices are not so firm as they were two weeks since. The result of the meeting held in Chicago (which was mentioned in last week's report) is likely to make itself felt before many days, and it would not be surprising to find prices advanced to where they were six weeks or two months since. For prompt delivery 2.70¢ @ 2.75¢ is quoted for carload lots from mill. Galvanized in like quantities is quoted at 3.25¢ @ 3.30¢.

**Wire Nails.**—The extreme dullness which has prevailed for the past two months continues. Prices fail to show any improvement, and some low prices are now quoted for cash, immediate delivery. Jobbers have taken advantage of this condition of affairs and have bought largely in anticipation of an early improvement. Carload lots are quoted at \$2 @ \$2.05.

(By Telegraph.)

Purchases of Pig Lead have been in moderate quantities, but the market has a firm tone. At the moment 4.30¢ is quoted for immediate delivery and in some cases 4.32½¢ is asked. Offerings are limited even at the latter figure. The demand for Spelter has much improved during the past week. This is the time of the year when smelters look for a heavy trade and prices are firming up in consequence. Lots for prompt delivery are quoted at 3.80¢; still higher prices are likely to prevail in the next few weeks.

## Cleveland.

CLEVELAND, July 6, 1891.

**Iron Ore.**—The market is firmer in every way. Dealers ask from 25¢ to 40¢ more ½ ton for desirable Ores than was paid a month ago, and lake freights have advanced from 55¢ to 65¢ from Escanaba to lower lake ports, 75¢ @ 90¢ from Marquette and from 90¢ to \$1 from Ashland and Two Harbors. Last season's Ore is being rushed forward to the furnaces with all possible speed, and new Ore is arriving in as big quantities as during the busiest part of the season last year. It seems probable that the total sales to date equal, if they do not exceed, 5,000,000 tons. Low grade Ores are nearly sold up, and only a small proportion of the most valuable grades remains to be disposed of. There is a good demand from Eastern furnacemen, while those in the Mahoning and Shenango valleys are buying somewhat sparingly, evidently waiting for any new developments that may occur. It is not likely that prices will go any higher, except for special grades of very rich and desirable Ores. Gogebic Bessemer are now quoted at \$4.50 @ \$4.75 and Minnesota Ores at \$5.50 @ \$5.75. The receipts of new Ore at Cleveland during the past week exceed 40,000 tons, while 35,000 tons have been sent down to the furnaces.

**Pig Iron.**—The market seems to gain in strength steadily. Inquiries for both Bessemer and Forge Irons are numerous, and with the beginning of this week there has appeared a demand for Foundry Iron. Valley furnacemen report a fair volume of business at prices slightly in advance of



last week's quotations. The interruption of a generally observed holiday has had its effect upon the volume of business for the past week. Sales of Bessemer at \$16.50 are reported, for July delivery. Local quotations are as follows:

Nos. 1 to 6 Lake Superior Charcoal	\$18.50 @ \$19.50
Nos. 1, 2 and 3 Bessemer, per ton.	16.80 @ 17.30
No. 1 Strong Foundry, per ton.	15.80 @ 16.80
No. 2 Strong Foundry, per ton.	15.30 @ 15.80
No. 1 American Scotch, per ton.	16.80 @ 17.80
No. 2 American Scotch, per ton.	15.80 @ 16.80
No. 1 Soft Silvery, per ton.	16.50 @ 17.50
Mahoning and Shenango Valley	
Neutral Mill Irons, per ton.	14.80 @ 15.80
Mahoning and Shenango Valley	
Red Short Mills, per ton.	15.00 @ 15.50

**Scrap.**—Not much is being done. The demand is small and little improvement is anticipated before the beginning of August. No. 1 Railroad Wrought is quoted at \$19.50. Old Car Wheels are worth about \$17.

**Manufactured Iron.**—The market is not very active, although the demand is fair. Many mills are taking stock and making improvements. Common Bar is still quoted at 1.60¢ @ 1.65¢, but better prices are looked for soon. The demand for Structural Iron is heavy, a natural result of the many contracts now being closed for large Iron and Brick structures about the city.

**Old Rails.**—Only a few scattering sales are reported at prices ranging from \$22 to \$22.25 for Old Americans. The market is weak.

## New York.

Office of The Iron Age, 96-102 Reade street, 1  
NEW YORK, July 8, 1891.

**Pig Iron.**—Reports from consumers generally indicate unwillingness on their part to do more than purchase for urgent requirements. The only exceptions are the manufacturers of agricultural implements, who report a heavy demand, and some of whom are in the market for heavy blocks. Stove manufacturers have not bought for some time, and are expected to come forward later on for larger lots. Machinery builders are buying sparingly. Little activity is expected at this season of the year, and the dullness prevailing is causing no surprise. Low offerings have been made lately by at least one representative of Alabama interests, the figure named for No. 1 Foundry being \$16, on dock New York. Malleable Iron works in this section have recently placed orders for Charcoal Iron, one lot of 800 tons being taken by a Michigan furnace on the basis of \$17, Buffalo. It is reported that even this low figure was shaded 25¢. Southern Car Wheel Irons are nominally held at \$18 at furnace, but there is little question that \$17 would be promptly accepted. Northern brands are quoted at \$16.75 @ \$18 for No. 1; \$16 @ \$16.50 for No. 2, and \$14 @ \$14.50 for Gray Forge. Southern Irons sell at \$16 @ \$17 for No. 1; \$15.50 @ \$16.25 for No. 2; \$15.50 @ \$16 for No. 1 Soft, and \$14 @ \$14.50 for Gray Forge.

**Spiegeleisen and Ferromanganese.**—The sale reported in our last issue as having been made by domestic manufacturers of Spiegeleisen to an Eastern mill proves to have been done by importers. Ferromanganese is dull at \$64 @ \$64.50 for 80 %.

**Billets and Rods.**—The Eastern Billet market is quiet, the report that a Barb Wire mill in this section had purchased a few months' supply of foreign Billets for re-export business not being confirmed. We quote Rods \$38 at tidewater.

**Steel Rails.**—The market continues extremely dull, no sales of any consequence having been reported during the week under review. The Maryland Steel Company have been formed with F. W. Wood

as president, to operate the Sparrow's Point extension of the Pennsylvania Steel Company, this form of organization having been found necessary on account of the differences in the State laws of Pennsylvania and Maryland, and for the sake of operating the two plants of the company separately. We continue to quote Steel Rails at Eastern mill steady at \$30.75 to \$31 at tide water.

**Rail Fastenings.**—The market is dull at 2¢ @ 2.10¢ for Spikes and 1.70¢ @ 1.80¢ for Bolts and Nuts, delivered.

**Manufactured Iron and Steel.**—There have been no transactions of magnitude during the week under review, although current business is fair in volume. Prices, however, show no improvement thus far, quotations remaining as below: Angles, 1.95¢ @ 2.10¢; Sheared Plates, 1.95¢ @ 2.25¢; Tees, 2.45¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 2¢ @ 2.15¢ for Tank, 2.3¢ @ 2.6¢ for Shell, and 2.5¢ @ 2.7¢ for Flange, on dock. Bars are 1.7¢ @ 1.9¢, on dock.

## Metal Market.

**Pig Tin.**—Local speculative operations have been on a moderate scale, and, while traders move very cautiously it is obvious that the reduction of about £1 per ton in London prices, which took place during the latter portion of the week under review, had a rather depressing influence, consistent as it was with the statistical data for last month. The latter show 349 tons increase in the visible supply for Europe and America, all of which is in the quantity afloat and likely to prove an important factor in regulating values in the immediate future, now that the European Tin-Plate mills are working on very short time. The local trade demand has been moderate and purchases for consumption hardly up to the average for the season. The end of the week, as reflected in Wednesday's movement, showed a slight improvement, with sales of 25 tons at 20.35¢ for August and 35 tons at 20.35¢ @ 20.40¢ for September delivery.

**Copper.**—There is absolutely no change in the market for this metal. The Lake Superior mining companies are turning out enormous quantities of mineral, six concerns having produced last month no less than 5314 tons, against 4693 during June, 1890, while the same concerns make a record of 28,048 tons for the past six months, against 26,750 tons for the corresponding period last year. With due allowance for the export movement it is obvious that there is considerable accumulation of supplies here, and, being well informed as to the situation, consumers buy only as immediate wants necessitate. Hence Lake Ingot at 13¢ virtually goes a begging and odd lots that come out at 12½¢ @ 12.90¢ find slow sale. The cheaper varieties are in relatively stronger position, owing to the heavy export movement of furnace material on old export purchases. Very little if any Arizona Ingot is on sale. The bulk of the product of the mines is under contract and it is stated that Pig Copper would bring 12¢, on dock, today. Casting brands at less than 12¢ are not readily obtained as smelters still experience difficulty in securing furnace material at a cost relatively lower than 12½¢ for Ingot.

**Lead.**—About 500 tons of Pig Lead sold during the week at 4.45¢ @ 4½¢, nearly all of which was taken by consumers. Speculators and local holders, as a matter of fact, have displayed a willingness to realize, despite a rather bold front put on by Smelters. At this writing, there

seems to be more spot Lead on sale at 4.45¢ than buyers are ready to take, and that, too, in the face of the fact that very little stock, if any, can be secured for shipment at less than 4½¢, laid down here at the moment.

**Spelter.**—Prime quality Western Spelter is very firm. Purchases have been on a moderate scale during the week, and the current demand is light, but production is apparently well under the control of orders and smelters offer with reserve. Probably some "off" brands may be secured at about 5.05¢, but 5.10¢ is generally considered a close rate for carloads, while 5.15¢ upward is asked. East St. Louis quotes 4.90¢ @ 4.95¢, which is equivalent to 5.20¢ @ 5¼¢ Eastern delivery.

**Antimony.**—The demand has not improved and prices are still rather weak. Hallett's quoted at 12¢, LX at 12½¢, and Cookson's at 14¢ @ 14½¢, in wholesale quantities.

**Tin Plates.**—Business has been very quiet throughout the week and the demand at present is moderate. Although there is an enormous stock here the assortment seems to be poor and prices for some varieties of Plates are very firm, while on others, more particularly Cokes, the leaning is in the other direction. Importations at this port during the past two months aggregate 1,145,000 boxes. The June movement was more than double that of the corresponding period last year. It is obvious that the supply here and at other ports is more than equal to consumption for the next four months. Nominal prices are as follows: Coke Tins—Penlan grade, IC, 14 x 20, \$5.30; J. B. grade, do., \$5.40 @ \$5.42½; Bessemer do., \$5.30; Siemens Steel, \$5.50 @ \$5.55. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.75 @ \$5.80; Siemens Steel, IC basis, \$5.90 @ \$6; IX basis, \$6.95 @ \$7. IC Charcoals—Melyn grade, \$6.30 @ \$6.35; for each additional X add \$1.50; Allaway grade, \$5.90 @ \$6; Grange grade, \$6 @ \$6.05; for each additional X add \$1. Charcoal Terns—Worcester, 14 x 20, \$5.75; 20 x 28, \$11.50; M. F., 14 x 20, \$7.40 @ \$7.50; do., 20 x 28, \$15.25; Dean, 14 x 20, \$5.15; do., 20 x 28, \$10.15 @ \$10.50; D. R. D. grade, 14 x 20, \$4.85; do., 20 x 28, \$10; Mansel, 14 x 20, \$5; do., 20 x 28, \$9.90; Alyn, 14 x 20, \$5.10; do., 20 x 28, \$10; Dyffryn, 14 x 20, scarce; do., 20 x 28, \$10.50. Wasters—S. T. P. grade, 14 x 20, \$4.75; do., 20 x 28, \$9.30; Abercarne grade, 14 x 20, \$4.70; do., 20 x 28, \$9.25.

## Financial.

The July settlements having passed without difficulty, coupled with a drop in foreign exchange, caused by a freer offering of commercial bills, a more comfortable feeling prevails in financial circles. The course of the Treasury Department with reference to the continuance of the 4½ per cents at the rate of 2¢ per annum is also a source of satisfaction, as it will add some \$15,000,000 to the supply of currency circulation. With the improved prospects more confidence is felt that the approaching demand for money to move the crops will be met. Moreover, it is believed that the gold sent to Europe must soon begin to return. Touching this point the London Statist of June 27 says: "The demands of the United States in the autumn are incalculable. Many well-informed persons believe that the money market in the United States will prove to be easier than most other persons think likely, and that therefore the American demand will be much smaller than has been supposed. It would be unsafe, however, to act on that

hypothesis. The wisest course will be to assume that as the United States have lost fully £13,000,000 sterling of gold in the first half of this year, they will take back at least a considerable portion of that amount in the last half of the year." In this view the *Economist*, another high London authority, is agreed. Quite as much to the point is the common expectation that the brilliant crop prospects will soon be reflected in all markets. The first new wheat has already come to hand from Kansas and Maryland, and the first bale of new cotton was received in Houston, Texas, 6th inst., a fortnight in advance compared with last year. The Kansas State board reported an increase of 62% in the acreage and a total estimated yield of 55,000,000 bushels. These advices coupled with an apprehended grain famine in Russia, cause lower prices in our local markets. Probably three-quarters of the winter wheat crop of Kansas and Missouri is now in the shock and in Illinois, Indiana and Ohio 50 per cent. of the crop has been cut. No wheat has been cut yet in Michigan. The thrashing so far indicates an average yield. In many localities, it is believed, there will be a fair movement of the new crop during the next 30 days. Bank Examiner Drew's dismissal from the public service is considered a logical result of his failure to close the Keystone National Bank of Philadelphia in time to protect innocent depositors. He yielded too readily to the importunities of those who thought, without reason, that the bank could be saved.

The stock market is dull, and operations are limited to professional traders. On Friday St. Paul took the lead in a well-sustained rise, which stimulated buying of the other grangers and of the most prominent stocks, Sugar Refiners' advancing on the dissolution of the injunction which had been issued against the paying of checks for dividends. On Monday it was observed that the loss in bank surplus reserve previously reported did not disconcert the street, as it was known to have resulted from the shipment of gold made too late for the former statement. On Monday the only news of importance was the confirmation of the report that the Secretary of the Treasury will reduce the deposits in the national banks to about \$15,000,000 from \$25,250,000, and that the reduction is now being made. Respecting railway foreclosures and receiverships since January 1, it appears that no old companies of any prominence have defaulted thus far, but that of 16 roads, representing 1512 miles and about \$56,200,000 capital, for which during the past six months receivers were appointed, nearly all were new roads which had but recently commenced operations.

Exports of merchandise from this port during the week, \$7,088,000; imports, \$11,772,000.

Government bonds were firm. The 4½ coupon advanced ½. In State securities \$1000 Tennessee settlement 3s sold at 67½. In bank stocks 20 shares of Manhattan sold at 175. Quotations are as follows:

U. S. 4½, 1891, registered.....	100
U. S. 4½, 1891, coupon.....	100
U. S. 4s, 1907, registered.....	116
U. S. 4s, 1907, coupon.....	116
U. S. currency 6s, 1895.....	100½

The recent improvement in American cotton oil shares is explained by the fact that papers are being drawn in a suit for damages against former trustees (1884) for giving \$5,000,000 of share certificates to the United States Cotton Seed Cleaning Company for patents now alleged to be worthless. The clearings of 60 cities last week aggregated \$1,020,832,672, a decrease of 11.3%; outside of New York the decrease was 10.8, New York decreased 11.6, Boston 14, Chicago 8.1, Philadelphia 19.5, St. Louis 6.9; Cincinnati increased 6.3, Galveston 377.6, Minneapolis 24.9, Indianapolis 110.9.

The operations of the Sub-Treasury and gold shipments to Europe more than offset the movement of money from the interior to this center, and in consequence the exhibit of the Associated Banks issued on Friday showed that the local institutions lost \$2,946,525 in surplus reserve, which reduced the amount held in excess of the legal requirements to \$15,465,075. The items showed an expansion in loans of \$3,930,000, an increase in deposits of \$2,622,900 and a loss in cash of \$2,290,800.

There is a better feeling in the market for commercial paper, and one feature is the inquiry by some of the trust companies. There is a good supply of first-class names, but no change in quotations. Business was done at 4% for short terms and 5 @ 6% for long terms, with little inquiry for seven months. Local banks are buying no paper, and in Boston and Philadelphia only customers are accommodated.

The exports of specie from New York last week were \$2,800,000. Total since January 1 \$78,792,000.

The posted rates for bankers' sterling are \$4.86 @ \$4.86½ for 60-day and \$4.88 @ \$4.88½ for sight. The market is dull and heavy.

Bar silver closed in London at 46½d per ounce and in New York at \$1.00½ @ \$1.00¾ per ounce.

The merchandise markets indicated the holiday influence. Wheat dropped to lower prices on favorable crop reports and free movements of new grain. Corn was fairly active. Coffee steady. In Sugar slack trade, prices nominal. Western pork packing showed a total of 3,720,000 hogs, against 4,550,000 a year ago. In dry goods a quiet demand and confidence in the future. Lower prices are not expected.

United States Treasurer Nebecker issued his statement of assets and liabilities under the new form adopted by the Department. The total assets are stated at \$205,143,308, and the total liabilities at \$51,249,499, leaving a cash balance of \$153,893,809.

There has been an increase of the debt of nearly \$6,000,000 during the past month, and the reduction of the fiscal year ending June 30 is only about \$22,000,000. The bonded debt shows a reduction of \$111,000,000 at the expense of the Treasury cash.

The Railroad Commissioners of Texas gave notice that July 6 they would establish a freight classification for all roads in the State, and that after July 10 no changes in freight traffic can be made without the approval of the commission.

The failures of the past six months, as reported by the mercantile agencies, seem to have been felt in the Western and Middle States more than in the South. In the West the total number was 1302, and in the Middle States 1451. The liabilities in the former aggregated \$21,388,470, and in the latter \$31,662,797. In the South there were 1134 failures, with \$17,186,274 of liabilities, while in the Pacific Coast States there were but 565, with liabilities of only \$2,373,000. In the City of New York alone there were 251 failures and \$8,188,785 of liabilities.

## Coal Market.

The recently-advanced prices fail to stimulate buying, even in hopes of covering at the old prices, and the usual summer dullness prevails. Especial solicitude is felt lest any break away from restraints and exceed their stated allotment. The 3,250,000 tons arranged for July is believed to be quite as much as the market can absorb.

The production of Anthracite for the week was 889,485 tons, for the year,

17,619,207; increase over last year, 2,397,897 tons. Pennsylvania Railroad Coal tonnage for the week was 244,125 tons; of Coke 100,417. The total Coke and Coal tonnage this year was 8,269,367 tons. Tonnage for the Reading for the week 195,000 tons.

The Bituminous Coal trade is dull, and there will be curtailment of the output this month, owing to the usual July idleness of the rolling mills east of the Alleghanies. Cumberland reports for the week ending 27th ult. 73,700 tons, and for the year 2,125,000 tons; decrease, 343,000 tons. Clearfield reports 50,000 tons; Beach Creek, 47,000; Pocahontas, 37,000 tons.

Reading's new circular shows prices, f.o.b., at New York as follow: Hard White Ash Broken, \$3.90; Egg, \$4; Stove, \$4.05, and Chestnut, \$3.75. Free White Ash Broken, \$3.80; Egg, \$3.85; Stove, \$4.05, and Chestnut \$3.75. North Franklin White Ash Egg and Stove, \$4.05, and Chestnut, \$3.75. Shamokin, Schuylkill Red Ash and Lorberry Egg, \$4.05; Stove, \$4.30, and Chestnut, \$3.90. Lykens Valley Broken, \$4.50; Egg, \$4.90; Stove, \$5.15, and Chestnut, \$4.35.

The average of prices at the mines in the Schuylkill region in June was \$2.22, against \$2.20 in May and \$2.24 in June last year.

The Lehigh Valley Railroad Company have not yet filed in the United States District Court their answer to the Interstate Commerce Commission to show cause for its failure to obey the order of the commission in the matter of reducing the tolls upon Anthracite Coal. Monday was the date fixed upon by the court for this action to be taken, but the statement was made at the office of the Lehigh Valley Company that it was not imperative that they should file an answer at once, and that it would be filed within a reasonable time. The present case is an outgrowth of the old litigation between Messrs. Cox Brothers & Co. and the Lehigh Valley, and is consequent upon the refusal of the latter to obey the mandate of the Interstate Commerce Commission as set forth in its decision, which was rendered in the spring. The outcome of this case is awaited with interest, not only by the Anthracite Coal trade, but by the railroad interests of the country, as upon it hangs in great measure the supremacy of the Interstate Commission.

The contract for furnishing 1000 tons of Bituminous Coal, delivered in the bins at the League Island Navy Yard, was awarded on June 30 to C. D. Norton & Co., at \$2.90 per ton. David Duncan & Co. of New York bid \$3.75.

## Louisville.

LOUISVILLE, KY., July 6, 1891.

There is little change to note in Iron circles; the dullness which has characterized the local market for some time past continues, though it is believed that as soon as the holidays are over there will be some activity. Outside of a round lot of Southern Car Wheel Iron placed with one of the Western companies, no sales of any magnitude have been reported. The holding off from buying does not seem to be occasioned so much on account of prices not being considered low enough, as that the amount of orders in hand for finished material is so small as to cause consumers of Pig to wait for the present, to see whether their orders will be sufficient to justify their purchasing the usual quantity for future delivery; those who have been so fortunate as to make contracts for a fair portion of their product for the next three or four months have supplied themselves with what Pig Metal they will probably need during the remainder of the year.



Furnaces do not appear to be very uneasy over the situation, feeling that it is but the usual midsummer dullness now prevailing, and that this will be followed by active trading and a large demand during the fall, with, perhaps, slightly better prices, and now that the July interest has been paid there will be little need of selling at an extremely low price in order to realize quick returns.

We make no change in our quotations, which are nominally for cash, f.o.b. cars Louisville, Ky.:

Southern Coke, No. 1 Foundry...	\$14.50 @ \$15.00
Southern Coke, No. 2 Foundry...	13.75 @ 14.25
Southern Coke, No. 3 Foundry...	13.25 @ 13.75
Southern Coke, Gray Forge...	12.75 @ 13.25
Southern Charcoal, No. 1 Foundry	16.00 @ 17.00
Southern Car Wheel...	19.00 @ 20.00

## British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]  
LONDON, WEDNESDAY, July 8, 1891.

The movement in prices of Pig Iron warrants during the past week has been narrow and the market is entirely bare of new feature. There is no outside speculative interest, nor any attraction for outsiders to take hold, since home consumption continues slow and the export movement moderate. Shipments last month were only 75,000 tons, against 114,000 tons in June, 1890. Stocks of Scotch Pig in Connal's stores have decreased 1000 tons to 512,000 tons, but there is a further accumulation of Cleveland Pig, the total of which amounts now to 141,000 tons. Latest sales of warrants were at 47/ for Scotch, 40/9 @ 41/ for Cleveland and 51/5 for Hematite.

The demand for Steel Ship Plates is somewhat better and the market is firmer, without, however, business at over £6, f.o.b. Otherwise the Steel trade remains dull and featureless.

The offering of Old Iron is very moderate at present, but the demand does not improve, and while holders show greater firmness, no advance on actual sales has been scored.

Pig Tin prices improved somewhat early in the week under the influence of free purchases by dealers and absence of cheap outside lots. A reaction subsequently took place, due to selling prompted by the freer Eastern shipments last month and increase of 380 tons in the visible supply. Spot stocks are still comparatively small and concentrated in few hands.

Copper has been inactive and prices have averaged somewhat lower under the weight of realizations by small holders and some pressure from the "bear" interest. The statistics of movement last month show a reduction of 900 tons in stocks and Chili charters of 1400 tons. Sales of furnace material during the past fortnight have been moderate.

Business in Tin Plate has been on a very moderate scale, but there is some inquiry from the colonies and the Continent for Bessemer at 13/, which price makers are slow to accede to. Some makers hope to resume work after the first fortnight of stoppage of mills. Workmen have agreed to stop work on Monday of each week with a view of restricting output. This,

it is estimated, will cut the production down at the rate of 850,000 boxes per annum. Exports last month were 71,000 tons, against 89,000 tons in June, 1890. The quantity sent to the States was 63,000 tons, or 33,000 tons more than last year.

Wages at the Bolckow-Vaughan's Steel Works have been reduced 5%.

**Scotch Pig Iron.**—Markers' iron finds slow sale and the market is flat, with prices lower for some brands.

No. 1 Coltness, f.o.b. Glasgow	60/6
No. 1 Summerlee, " "	58/6
No. 1 Gartsherrie, " "	58/6
No. 1 Langloan, " "	60/6
No. 1 Carnbroe, " "	49/6
No. 1 Shotts, " at Leith	60/6
No. 1 Glengarnock, " Ardrossan	52/
No. 1 Dalzellington, " "	52/6
No. 1 Eglinton, " "	50/6
Steamer freights, Glasgow to New York, 2/;	
Liverpool to New York, 10/.	

**Cleveland Pig.**—The market is rather weaker, with no improvement in the demand. Makers quote 40/9 for No. 3 Middlesborough, f.o.b.

**Bessemer Pig.**—There is no improvement in the demand, but makers hold rather firmly at 52/6 @ 53/ for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

**Spiegeleisen.**—The demand still runs light and prices are without change. English 20% quoted at 95/, f.o.b. shipping port.

**Steel Rails.**—There has been but little business and makers offer freely at former prices. Heavy sections quoted £4. 7/6, and light sections £5 @ £6, f.o.b. at N. W. England shipping point.

**Steel Blooms.**—Market continues dull and unchanged. Makers ask £4. 5/ for 7 x 7, f.o.b. at N. W. England shipping point.

**Steel Billets.**—Sales are moderate, and chiefly at old prices. Bessemer, 2½ x 2½ inches, quoted at £4. 10/, f.o.b. at N. W. England shipping point.

**Steel Slabs.**—The market remains very quiet, with Bessemer quoted at £4. 10/, f.o.b. at N. W. England shipping point.

**Old Iron Rails.**—Demand is moderate and buyers and sellers are still apart. Tees quoted at £2. 17/6 @ £3, and Double Heads £3. 2/6 @ £3. 5/, f.o.b.

**Scrap Iron.**—Sales are small and the demand moderate. Heavy Wrought Iron quoted at £2. 10/, f.o.b.

**Crop Ends.**—Very little doing in these. Bessemer quoted at £2. 15/ @ £2. 17/6, f.o.b.

**Tin Plate.**—No change in the situation. We quote, f.o.b., Liverpool:

IC Charcoal, Alloway grade...	15/9 @ 16/
IC Bessemer Steel, Coke finish...	14/ @ 14/3
IC Siemens	14/3 @ 14/6
IC Coke, B. V. grade...	13/6 @
Charcoal Terne, Dean grade...	15/3 @ 15/6

**Manufactured Iron.**—Business is of moderate volume, and prices show little change. We quote, f.o.b. Liverpool:

Staff, Marked Bars	£ s. d.	£ s. d.
Common	6 12 6	6 15 0
Staff, Bl'k Sheet, singles	6 14 3	7 2 6
Welsh Bars (f.o.b. Wales)	5 12 6	5 15 0

**Tin.**—Market firmer at the close, with more doing. Straits quoted at £91. 12/6 @ £91. 15/, spot, and £91. 17/6 @ £92 for three months' futures.

**Copper.**—Fairly brisk business to-day, but prices rather easy. Merchant Bars quoted at £54. 10/, spot, and £55, three months' futures. Best Selected, £60.

**Spelter.**—Demand fair and market steady at £23. 15/ for ordinary Silesian.

**Lead.**—Prices easier at £12. 7/6 for Soft Spanish and the market quiet.

## Imports.

### Hardware, Machinery, &c.

Atkin & Co., Mach'y, pgs., 15
Boker, Hermann & Co., Arms, cs., 48; Hardware, cs., 6
Devoy Bros., Mach'y, pgs., 31
Downing, R. F. & Co., Mach'y, cs., 154
Fraser, Peter & Co., Files, cks., 2
Field, Alfred & Co., Gun Barrels and Stocks, cs., 37
Graef Cutlery Co., Cutlery, cs., 5; Hardware, cs., 2
Godfrey, Chas. J., Arms, cs., 12
Hartley & Graham, Arms, cs., 12
Hawley, E., Mach'y, cs., 4
Illfelder, B. & Co., Hardware, cs., 10
Jordan, A. J., Gun Barrels and Stocks, cs., 15; Anvils, 50
Kennedy & Moon, Mach'y, cs., 27
Knauth, Nachod & Co., Mach'y, cs., 18
Montgomery, Chas. Jay, Ore-Crushing Mach'y, cs., 21
New York, Ontario and Western Railroad, Mach'y, cs., 9
Schoverling, Daly & Gales, Arms, cs., 38
Sacks & Bros., Mach'y, cs., 3
Werlemann, H., Arms, cs., 30
Ward, Jas. E. & Co., Mach'y, pgs., 153
Wiebusch & Hilger, Arms, cs., 16; Stocks, cs., 4; Hdw., cs., 10
Wyman, Charles & Co., Arms, cs., 36
Order—Mach'y, cs., 16; Hdw. and Cutlery, cs., 7

### A Five-Day Steamer.

There has been placed on view in the Royal Naval Exhibition, in London, a beautifully finished model of a vessel designed by James & George Thomson, Limited, Clydebank, Glasgow, guaranteed to steam at the rate of 23½ knots an hour, which will enable the vessel to cross the Atlantic within five days. In view of the divergence of opinion as to the details of such a fast vessel, Messrs. Thomson are naturally unwilling to give every one the benefit of their great and successful experience in the designing and constructing of modern Atlantic steamers, so that the dimensions, &c., are not indicated. We understand, however, that the vessel is about 630 feet long by 70 feet beam. The lines are very fine forward, and there is a "sweetness" aft which even exceeds the beauty of the City of Paris. The floor is flat, with a scarcely perceptible rise from keel to bilge. Unlike the City of Paris the new vessel will have a straight stem, but she will have the same large area balanced rudder and twin screws. These are 22 feet or 23 feet in diameter, and they are well supported. The tube forms a part of the solid forging, there being a heavy web between it and the internal framing, while at the extreme after end there is attached to the usual A frame another long tube, in which the shaft will work in bearings. There is only a small part of the shaft between the two bearings working outside the tubes. There are four funnels, and about 200 feet of the length of the ship is left for the boilers and bunkers. The engines are to be triple compound, with four cylinders working four cranks. They will probably indicate 33,000 indicated horse-power. The promenade deck in the new vessel is sheltered by a deck above, where the lifeboats are carried, while the roofs of the deck structures provide a promenade presumably for second-class passengers. The smoking room is forward and the main dining saloon aft, the former on the promenade and the latter on the upper deck, and over the dining saloon there is an immense arched roof, as in the City of Paris. In addition to the bridge forward, there is one aft, both being something like 45 feet from water level. There are two sticks as masts, but they seem only for signals and to provide a crow's nest for the "look-out." On the promenade deck are 12 machine guns, and in other respects the vessel is made suitable for an armed cruiser, the plans indicating a more minute subdivision even than the very adequate arrangement in this respect of the recently built Inman lines.

# HARDWARE.

## Condition of Trade.

**T**HIS IS PERHAPS the duller time of the year and the volume of business is small. Manufacturers and merchants are making their arrangements for next season's trade, and report the current demand as exceedingly light. It is to be noted, however, that they refer with a good deal of confidence to the prospect for an excellent business within the next few months. In the matter of prices there have been no important developments since our last review. In some staples buyers are watching the market carefully, as there are some indications of possible strengthening in the near future.

### Chicago.

(By Telegraph.)

Midsummer dullness now affects the Hardware trade here, and business has shown some falling off in the past week, irrespective of the interruption caused by the national holiday. The dullness is perhaps intensified for the time by the heavy crops now being harvested in the West, which are absorbing the time and attention of everybody who can be drawn to work in the fields. Farm improvements involving the consumption of Hardware are therefore at a standstill, but will be resumed with zeal a little later. Continued firmness in Tin Plate is the leading feature with regard to prices. Nails and Barb Wire are holding their own.

### St. Louis.

(By Telegraph.)

Jobbers report the usual midsummer dullness. The demand for Shelf and Heavy Hardware continues good, however, and this with a lively call for seasonable goods makes a fair average trade. Prices show no special changes. Wire Nails fail to improve as anticipated, and Cut Nails, while in better demand, do not advance in price. Copper and Copper goods are in good demand, but prices are a trifle weaker. Tin Plate is strong, and the trade are at a loss whether to expect an advance or not, and are timid about placing their orders. The speculative element which has entered this department causes much of this feeling of uneasiness. Taking the trade as a whole, however, business is fairly satisfactory, and outside of the dullness in collections there is little or no complaint heard.

## Notes on Prices.

**Cut Nails.**—There does not appear to be any improvement in the condition of Iron Cut Nails, and it is understood that previous quotations have in some instances been slightly shaded. The demand, however, is light and the volume of business small. Steel Nails are in a somewhat better condi-

tion and prices are firmly maintained. While there is not a quotable advance, concessions formerly given have been withdrawn, and the mills are not so solicitous of obtaining orders at current prices. It is understood that a number of good orders have been placed, but the trade have not been purchasing with much confidence. Quotations are on a basis of \$1.55 to \$1.60 at mill for carload lots with a 25 or 30 cent average.

*Chicago, by Telegraph.*—Steel Cut Nails have been sold quite freely by local manufacturers, who report a continued good demand from dealers. In this immediate vicinity the inquiry is even greater than last week and the manufacturers talk of advancing prices. They now quote \$1.65, Chicago, on a 30-cent average. The Wheeling mills are not meeting this price, but quote \$1.55 at factory, which is 5 cents dearer laid down in Chicago. They aim to get \$1.85, Wheeling, as a flat price. Jobbers quote \$1.75 for small lots from stock.

**Wire Nails.**—The slight improvement noted in our last issue continues, with a moderate business. Some of the mills are closing down for a few weeks and there is a disposition on the part of manufacturers not to force sales by concessions in price. The trade apparently are convinced that there is a fair probability of somewhat better prices ruling next season than the lowest prices which have recently been made. Quotations for carload lots at mill are on the basis of \$2, but some of the manufacturers quote them at \$2.05. Small lots from store are quoted at \$2.15 @ \$2.25.

*Chicago, by Telegraph.*—Manufacturers' agents report a large inquiry for Wire Nails from all over the Northwest, which is doubtless caused by the fear of higher prices. Terms are asked on immediate shipment, indicating that stocks are not large and that buyers are seeking best rates. Factory lots are now quite generally ruling close to \$2.10, Chicago, while jobbers quote \$2.15 to \$2.20 from stock.

**Barb Wire.**—The situation remains as described in our last issue, prices being firmly maintained by the manufacturers with but slight cutting by the jobbers. The mills are unwilling to accept large orders for future delivery at present prices and the market is characterized by firm tone.

*Chicago, by Telegraph.*—There is not much business doing at present either by manufacturers or jobbers. Small lots are still quoted at \$2.75 for Painted, with 55¢ @ 100 advance for Galvanized.

**Glass.**—There is nothing of interest to note in the Glass market. The quiet time expected at this season of the year causes the demand to be limited, and trade is quiet. The stocks in manufacturers' hands are considered sufficient to supply moderate requirements, and will probably

carry them until fall, unless there is a boom in building. Quotations remain unchanged, on the basis of American Window Glass, for carloads, 80 and 10 per cent. discount; less than car lots, 80 and 5 per cent. discount; French Window Glass, 75 and 10 and 5 per cent. discount, with an additional 5 per cent. discount when 50 boxes are ordered and taken in any calendar month. American Plate is held at discount 50, 10 and 5 per cent., and Imported Plate at discount 60 per cent.

**Stocks and Dies.**—An advance of about 10 per cent. has been made by the manufacturers of Stocks and Dies. In announcing this advance the following manufacturers unite:

J. M. King & Co., Waterford, N. Y.  
Holroyd & Co., Waterford, N. Y.  
Butterfield & Co., Derby Line, Vt.

**Boiler Tubes.**—The following is the present list on Boiler Tubes, showing the advanced prices on the small sizes as recently adopted by the associated manufacturers. The list is subject to the following discounts:

Sizes up to 2½ inches, inclusive.....55 %  
Sizes 3 to 6 inches, inclusive.....65 %  
Sizes 7 inches and up.....55 %

### Lap-Welded Charcoal-Iron Boiler Tubes.

Outside diameter.	Price per foot.	Thickness.	Thickness nearest Bm W. G.	Nominal weight per foot.
Inches.		Inches.		Pounds.
1	\$0.32	0.085	13	.90
1¼	.30	0.095	13	1.15
1½	.27	0.095	13	1.40
1¾	.24	0.095	13	1.66
2	.22	0.095	13	1.91
2¼	.25	0.095	13	2.16
2½	.28	0.109	12	2.75
2¾	.31	0.109	12	3.04
3	.34	0.109	12	3.33
3¼	.38	0.120	11	3.96
3½	.43	0.120	11	4.28
3¾	.45	0.120	11	4.60
4	.53	0.134	10	5.47
4½	.60	0.134	10	6.17
5	.72	0.148	9	7.58
6	1.00	0.165	8	10.16
7	1.45	0.165	8	11.90
8	1.85	0.165	8	13.65
9	2.25	0.180	7	16.76
10	2.75	0.203	6	21.00
11	3.25	0.220	5	25.00
12	3.55	0.229	4½	28.50
13	4.20	0.238	4	32.00
14	4.75	0.248	3½	36.00
15	5.75	0.259	3	40.00
16	6.75	0.284	2	47.11
17	8.00	0.300	1	52.89
18	9.50	0.340	0	63.37

The above prices are for Tubes up to 20 feet long. For Tubes in excess of that length, 10 per cent. will be added to net of invoice.

Tubes shorter than 12 inches sold from "Safe End" price list.

Extra thickness of Tubes will be charged as per list of extra gauges.

**Shot.**—An advance of 5 cents was made July 3 by the associated manufacturers in the price of Shot. The revised prices on ton lots or over at tower are as follows, terms net 30 days, or 2 per cent.





Remittance Blanks.

Miller, Sloss & Scott.

WE GIVE BELOW, without the heading, a remittance blank used by Tuthill Spring Company, Hammond, Ind.:

A NEW HARDWARE jobbing house has just been started in San Francisco, Cal., under the name of Miller,

the Dunham, Carrigan & Hayden Company of San Francisco and have thus had much valuable experience. Mr. Joseph Sloss, the secretary and treasurer, will have control of the office and financial

DEAR SIR:

For invoice - - - - - \$

For

"

Total - - - - - \$

Less freight - - - - - \$

" per cent. discount - - - - -

"

"

I inclose to balance for - - - - - \$

No acknowledgment is necessary.

Respectfully yours,

WM. H. TUTHILL, Treasurer.

This form is referred to by the company as having in their judgment advantages over any which they have seen. They refer to it as giving opportunity for remitting for many invoices and for as many deductions as are necessary. Their experience has been that many persons in settling an account do not give the items of invoices or deductions clearly, and refer to this form as leaving no chance for obscurity.

Still a different form is that used by Daggett & Cook, Petaskey, Mich. It is

Sloss & Scott. The firm have secured the four-story building, 12-16 Pine street, formerly occupied by J. C. Johnson & Co. The building has been completely fitted up for their business, having three hydraulic elevators to facilitate the handling of goods, two of which have just been constructed. The firm was incorporated May 19, and is composed of Charles E. Miller, president; A. W. Milligan, first vice-president; John A. Scott, second vice-president, and Joseph Sloss, secretary and treasurer, who, together with A.

department, being especially fitted for this work through his several years' experience in the Anglo-California Bank. The company have also secured the services of W. A. Rice, W. A. Leonard and Carlton F. Moulthrop, men who are referred to as thoroughly posted in the Hardware business, having occupied responsible positions with the Dunham, Carrigan & Hayden Company. It is proposed to carry a complete line of Shelf and Heavy Hardware, Tools, Mill and Mining Supplies, Engineers' and Railroad Supplies, Iron, Steel, Pipe, Sheet Iron, Fittings, &c.

Inclosed find check No. on

Petaskey City Bank, Petaskey, Mich.,

for - - - - - \$

Discount - - - - - \$

Freight - - - - - \$

in settlement for

Please acknowledge receipt and oblige,

Yours truly,

Daggett & Cook,

per

Trade Items.

BRYAN MFG. COMPANY, Bryan, Ohio, announce that for the convenience of the trade and at the request of some of their patrons they have concluded to carry a full line of their Wheelbarrows in Chicago, and have accordingly arranged with H. H. & C. L. Munger, 142 Lake street, in that city, to represent them direct. These parties will offer the company's goods at factory prices.

ON JULY 1 CHARLES E. CRANE, who for the past eight years has been at the head of Crane Bros. & Co., Yazoo City, Miss., as general manager and buyer, retired from that position and goes with his family to Seattle, Wash., where he expects to find a more congenial climate. E. S. Crane, who has been cashier for many years, will succeed to his position. There will thus be no change in the general conduct of the business, which we are advised has been a very successful one.

NUBIAN IRON ENAMEL COMPANY, Chicago, Ill., are sending a calendar to stand or hang, covering the months of July and August. A leaf is given to each date, with a heading referring to Nubian Enamel.

OUR READERS will observe the announcement on another page in which "A Manufacturer" desires to negotiate with travelers visiting the Hardware trade

in the above form, omitting the heading, which calls attention to their business as Hardware and iron merchants.

L. Scott and Leon Sloss, constitute the Board of Directors. Messrs. Miller, Milligan and Scott have been identified with



of Pennsylvania, Ohio, Indiana, Illinois and several other States for the sale of a small line of well-established Hardware specialties. It is stated that a commission of 10 per cent. will be allowed.

BUCK BROTHERS, Millbury, Mass., report their sales for June as being far in excess of any June since their business was established.

KILMER MFG. CO., Newburgh, N. Y., have opened an office at 102 Chambers street, New York, in charge of B. J. Mann, for sale of Wire Rods, Bale Ties, &c.

THE FIRM OF BAUER & CO., Petaluma, Cal., dealers in Hardware, Farm Implements, Iron, Steel, &c., has undergone a change, the style being now Bauer & Schluckebier.

BURTON H. COOK, 941 Fulton street, Brooklyn, N. Y., has recently been making an improvement in his Rotary Ash Sifter and Coal Screen, which is illustrated in his advertisement on another page. It will be perceived that the Sifter is now put on the market made of galvanized iron instead of wood, as heretofore.

THE PARTNERSHIP heretofore known as Hartman & Durstine, lumber dealers and manufacturers of Sash, Door, Blinds and Moldings and the Hartman Patent Inside Sliding Window Blinds, has been dissolved, and it is announced that the Sliding Blind Business will hereafter be conducted by J. B. Hartman, the patentee of the Blinds, under the firm name of the Hartman Sliding Blind Company, Wooster, Ohio, who hopes to merit the continued favors of the trade.

THE EMPIRE KNIFE COMPANY, West Winsted, Conn., whose line of Pocket Knives has been handled exclusively in the West and South by McCoy & Sanders, New York, for the past five years, have, owing to the dissolution of that house, decided to sell their goods directly to the trade, and with this in view they respectfully ask all the old customers in the West who have been buying Empire Pocket Knives through McCoy & Sanders to communicate with them at once. The company advise us that they have a new catalogue in process, which will be sent to any one on application, and state that their salesmen will call on all former customers. For sections of the West and South not already covered, the company would be pleased to correspond with jobbers who are not now handling their line of American Knives.

T. H. CRANSTON and C. F. Jennings, both of whom are long residents of Chicago, and are well known to the Hardware trade of the Northwest, have established a firm under the style of Cranston & Jennings at 60 Wabash avenue, Chicago, for the sale of Hardware specialties, small wares and fine Cutlery, operating as manufacturers' agents and commission merchants. They are sole selling agents for J. Curley & Brother of New York, representing Wostenholm, Rodgers, Wade & Butcher and other high-grade foreign makers. They are also agents for

G. T. Moore, New York, Hardware Specialties.

A. S. Henn & Co., New Haven, Conn.

P. Lowentraut, Newark, N. J.

Portsmouth Wrench Company, Boston.

Peoria Metal Spinning Company, Peoria, Ill.

Wing Nickel Works, Chicago.

J. Wiss & Sons, Newark.

Slaymaker, Barry & Co., Lancaster, Pa.

E. Covert Mfg. Company, Farmer Village, N. Y.

New England Specialty Company, North Easton, Mass.

Numeral Mfg. Company, Indianapolis.

The new firm are building up an extensive trade, partly by reason of their wide acquaintance and partly through the excellent line of goods which they have fortunately been able to secure.

THE LEGISLATURE of the State of Washington passed an act on June 7, 1891, appointing a State Board of Horticulture having power to impose a fine upon any growers of fruit trees or hops who shall not adopt some method of spraying such trees and plants, for the purpose of exterminating noxious insects. The fine is not to be less than \$25 or more than \$100; the property may be pronounced a nuisance and destroyed. Washington is said to be the first State to pass a law on this subject and it is probable that in this it will be followed by others. This action illustrates the fact that the necessity for taking active measures against insect pests is being recognized, and is connected with the present development in the production of new Spraying Machines.

WINTHROP PARKER, 206 Broadway, New York, assignee of E. F. Nurse & Co., is settling up with creditors, although his accounting is not due until February, 1892. This prompt settlement is deserving of mention, inasmuch as creditors have usually to wait from 12 to 18 months in such cases.

THE TRADE WILL observe the advertisement of Ph. Roux & Co., engineers and merchants, 54 Boulevard du Temple, Paris, calling attention to the fact that they make a special business of importing from the United States Hardware goods and Machinery, and soliciting correspondence, catalogues, &c., from manufacturers, with terms, &c. They have, we are advised, for several years represented a number of leading firms, and are in a position to give the best references.

THE BUSINESS heretofore conducted by Louis Ernst and Louis J. Ernst, under the name of Louis Ernst & Son, Rochester, N. Y., was on July 1 transferred to a corporation, the directors of which are Louis Ernst, Louis J. Ernst, Edward J. Ernst, Charles B. Ernst and Helen E. Ernst. The corporate name is Louis Ernst & Sons.

THE SERCOMBE & BOLTE MFG. COMPANY, Milwaukee, Wis., advise us that they contemplate going into the manufacture of Bicycles for next season about August 1. They have various specialties and contrivances in combination with the Bicycle trade, among which are the Bolte Pneumatic Tire, the Bolte Cushion Tire, the Bolte Spring Fork, and the Bolte Safety Bicycle Saddle in four styles. They also manufacture the Sercombe Spring-Fork Safety Bicycle.

AS REFERRING to seasonable goods the trade will be interested in the announcement of Field Force Pump Company, Lockport, N. Y., which appears on another page of this issue, illustrating one of their many patterns of Spraying Pumps.

AMONG THE PASSENGERS that sailed on Wednesday last by the steamer Waseland for Antwerp was Frank C. Oliver of Hawley Brothers Hardware Company. He purposes being absent six weeks, visiting Brussels, Paris and London, returning by the City of Paris in August.

### Gray, Fall & Co.

GRAY, FALL & CO., 223 and 224 North Market street, Nashville, Tenn., have shown their enterprise by the issue of a handsomely illustrated catalogue and price-list of over 600 pages. The book shows evidence of great care in its convenient arrangement, while the paper and typographical work are excellent. It is liberally illustrated, and shows in the most compact form such goods as they carry in stock, of which goods the lines are very complete. They issue no discount sheet, owing to the constant fluctuation in the

prices of goods. They call particular attention to the fact that their business is exclusively wholesale. Their customers will doubtless appreciate the catalogue as a book of reference; also as an aid in making up their orders and effecting sales.

### Price-Lists, Circulars, &c.

THE KILBOURNE & JACOBS MFG. COMPANY, Columbus, Ohio: illustrated catalogue, including contractors' R. R. Plows, Wheel and Drag Road Scrapers, Trucks, Baggage Barrows, Push Carts, Wooden Wheelbarrows of all kinds, Tubular Steel Wheelbarrows, Railroad, Farm and Plantation Dump Carts, Steel Sinks and Water Troughs, Pressed-Steel Shapes, &c. Attention is called to the many additions to their line of goods, which have been recently made, as shown in their general catalogue. They refer to the fact that they are large manufacturers of Earth-Moving Implements; and also to their success in the production of Pressed-Steel Shapes.

W. R. OSTRANDER & Co., 195 and 197 Fulton street, New York: Speaking-Tube Hardware, Speaking Tubes, Elbows, Mouthpieces, Bell Alarms, &c., Gongs, Bell-Hangers' Hardware, Electric Bells and Supplies, Pneumatic Call Bells; Oral, Electric, Mechanical and Pneumatic Annunciators. This, the eighth edition of their revised catalogue, contains a complete list of their manufactures. They have added a number of goods since the seventh edition was issued, and with enlarged factory and skilled mechanics are enabled to fill orders promptly. They comprise in this edition six systems: Speaking Tubes, Electric Call Bells, Electric Burglar Alarms, Electric Gas Lighting, Mechanical Door Bells, &c., and Pneumatic Call Bells, &c.

POPE & STEVENS, New York and Philadelphia: Dog Collars, Muzzles, Roller Skates, Skate Straps, &c. Dog Collars and Kennel Furnishings are shown in a great variety of styles. They are also headquarters for Barney & Berry's Club Skates and C. S. Osborne & Co.'s Tools. Particular attention is directed to their line of Dog Collars, which is large, and contains many novelties. They state that with increased facilities they are now prepared to furnish a large and complete assortment of Dog Furnishings of every description.

THE ROGERS & HUBBARD COMPANY, Middletown, Conn.: Granulated Raw Bone for case-hardening and coloring. This is manufactured in five sizes. No. 1 for heavy work, locomotives &c.; No. 2 for general machine work, fire arms, axles, &c.; No. 3 and 4 for small work, ring travelers, sewing machines, chucks and screws; and the Granulated Meal for tempering and coloring. Among those who are mentioned as having used Granulated Raw Bone for several years are Brown & Sharpe Mfg. Co., Winchester Repeating Arms Company, Colt's Patent Fire Arms Mfg. Company, Dazell Axle Company and Sheldon Axle Company.

BRADLEY & Co., Syracuse, N. Y.: The Bradley Climax Buckboard. It may be changed so as to use a single seat, front and rear seats, or the front and rear seat may be placed back to back. The rear seat is as wide and within 1 inch of as high as the front one. The Buckboard is made up in quartered oak and finished in the natural wood.

BINGHAMTON WAGON COMPANY, Binghamton, N. Y.: A unique and amusing 4th of July folder, calling attention to their Climax Banner Buckboard.

D. F. BIGELOW, Worcester, Mass.: Wire Fly Killer. This is a broom-like device, 15 inches long, made of fine spring steel wire, with which the flies are killed. The claims are made that it kills but does not crush the fly or other insect; that the in-

sect can be killed on the most delicate wall paper or ceiling without soiling, and that as it cuts the air, the insect, feeling no pressure, cannot escape.

FIELD FORCE PUMP COMPANY, Lockport, N. Y.: Latest improved Outfits for spraying fruit trees by hand and horse power, and containing hints, suggestions, receipts and general information for the protection of fruit from the ravages of pests. The information contained in this catalogue is of especial interest at this time.

NORWICH LOCK MFG. CO., Norwich, Conn., issue a price list of Padlocks and Padlock Keys, under date June 25, which is the same as the revised lists adopted by other manufacturers of these goods.

### Marking Prices.

P. H. ROBBINS, Chester Depot, Vt., has rebuilt the entire inside of his store, which has resulted in a most convenient and methodically arranged establishment. We take pleasure in presenting for the benefit of our readers his system of marking goods. The wooden boxes or drawers for Shelf Hardware have a small

business to H. E. Koser of Portland, Ore. Mr. Koser is a practical tinner and will attend to that branch of the business. The firm name will hereafter be Wm. Fauls & Co.

That I. E. Baird, Jacksonville, Fla., dealer in Paints, has decided to add to his stock an assortment of Hardware. Mr. Baird was formerly in the Hardware line and thoroughly understands the business. He will utilize his present quarters for the sale of the goods.

That Ladd & Leslie are the proprietors of a new Hardware store at Middlesborough, Ky.

That Joseph Payne has bought an interest in the Implement and Hardware store of Murphy & Cannon, Logan, Ohio, Mr. Murphy retiring.

That the Hardware store of A. W. Staples & Son, Lathrop, Mo., was entered by burglars on the 25th ult. and quite a quantity of Pocket Knives, Razors and Pistols were abstracted.

That burglars broke into the Hardware stock of Elmer Peck, Elba, N. Y., on the 29th ult. and got away with considerable cash and \$50 to \$60 worth of Razors and Pocket Knives. The thieves left no clew,

No .....	List .....	Dis .....	Size .....
Net Cost .....	Retail .....	Job .....	
Bot of .....	When .....		
Remarks .....			

#### Label for Marking Goods.

recess cut in the side of each, with a chisel, to hold a heavy paper label, without any danger of its being torn or rubbed off. The labels are printed, as shown in the accompanying illustration. A thin gummed label of the same kind is used on full packages of goods. The blank spaces are filled out, and give at a glance any information regarding the goods.

### It Is Reported—

That a new Hardware store has been opened in East Fairfield, Vt., by N. C. Nixon & Co.

That S. A. Brock has opened a Hardware store at Malden, Mass., and has put in a varied assortment of goods.

That John Maclay and his son, Stanley Maclay, will soon engage in the Hardware business at Savanna, Ill., having bought a store there. Mr. Maclay is an old and experienced Hardwareman.

That S. Swengel, Brewster, Iowa, has bought the larger part of the stock of Hardware and Tinware of F. L. Howell of the same place. Mr. Swengel will keep a full stock of the above goods as well as Stoves.

That Montgomery Babbidge has recently opened a Hardware store at Bay City, Mich.

That F. A. Luther expects to open a Hardware store at Redlands, Cal., in a short time.

That Onderdonk & Bell, dealers in Hardware, &c., Westwood, N. J., have been succeeded by S. Bell.

That D. P. Haselton has purchased the entire Hardware stock of Henderson & Huntley, Carthage, Mo., and will remove it to Columbus Kan

That J. C. Bates & Co., dealers in Hardware, are moving to Gainesville, in that State.

That Wm. Fauls, Dallas, Ore., has sold an interest in his Hardware and Stove

but it is thought that the guilty parties will speedily be apprehended.

That W. & M. Everson, dealer in Hardware, Oakland, Cal., have dissolved partnership. M. Everson will continue the business at the old stand.

That Teague, Barnett & Co., wholesale Hardware, Montgomery, Ala., will soon take possession of new quarters which are now rapidly approaching completion.

That Wm. A. Manchester, Somerset, Mass., is about to close out his Hardware business.

That Henry G. Burrell, Stoughton, Mass., has opened a new Hardware store in that place.

That G. M. Dayton has sold his stock of Hardware at Port Huron, Mich., to Mr. Thompson.

That Henry Beneke, El Paso, Texas, has sold his Hardware and Stove business to Fassett & Kelly.

That Mrs. Louise Schaub, dealer in Hardware, Menasha, Wis., has been succeeded by Frilling Bros.

That fire at Saccarappa, Maine, on June 25, damaged the establishment of McClellan, Lane & Co., Hardware and groceries. Their loss was \$2500, fully covered by insurance.

That Mr. Honsinger will open a Hardware store at Round Lake, N. Y.

That Campbell & Greeley, Rochester, Vt., were robbed on the 20th inst. The amount stolen was insignificant.

That Armstrong & Co., dealers in Agricultural Implements, North Prairie, Minn., have removed to Royalton, where they will occupy larger quarters.

That the Hardware store of J. H. Gardiner, on Main street, Quaker street, New York., was burned out June 28. Part of the stock was gotten out.

That Theo. Huss of Allen & Huss, Hardware dealers, Cleveland, Ohio, has sold his interest to W. A. Mitchell, late with Morley Bros., Saginaw, Mich.

### Adjustable Ratchet Bar and Bracket Store Shelving Irons.

J. W. PATTON, Macon, Mo., is offering the trade Iron Bars and Brackets for store shelves, as illustrated herewith. These consist of the Ratchet Bar to fasten against the side walls of the building; Brackets which fit into the Bars at any desired height; Clips which hold the

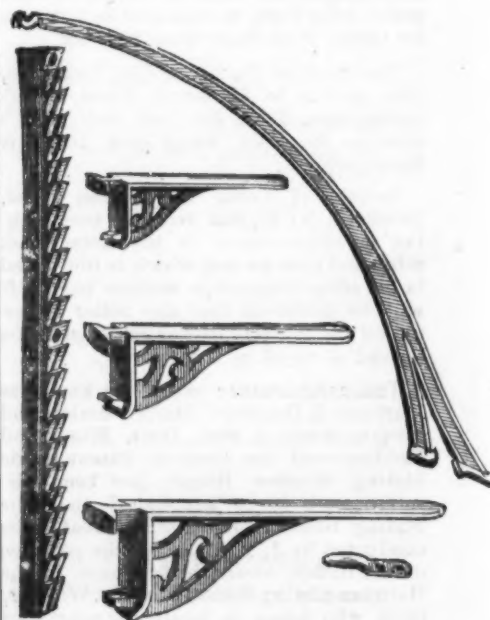


Fig. 1.—Irons Ready to Fasten Against the Wall.

shelves on to the Brackets and Crane Braces on which poles are fastened. Fig. 1 shows these various parts in detail. The Ratchet Bar is 2 feet long, with adjustments every inch. There is one screw hole at the top and one in the center. There is a slot  $\frac{1}{4}$  inch wide running between the notches into which the upper

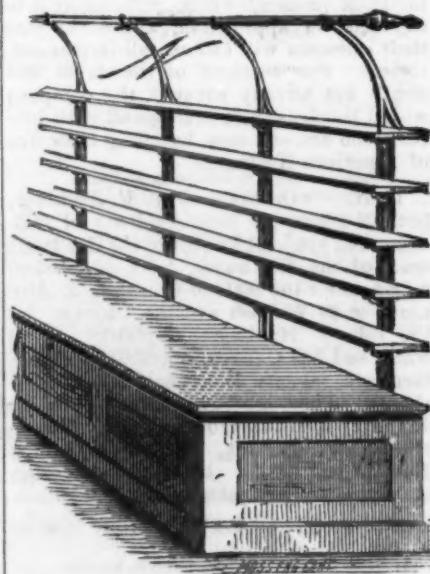


Fig. 2.—Shelving Ready for Use.

lug on the back of the Bracket fits, while the lower lug rests on the notches. The Crane Brace is screwed against the wall and also rests on the top shelf. The shelving ready for use is shown in Fig. 2. The Brackets are made in four sizes, 7, 12, 17 and 24 inches long. The manufacturer claims the following advantages for this style of shelving: It makes a straight



and uniform line; of little expense in making changes in shelving; can readily be moved to another building; more goods can be put on the shelves and shown better; the shelf boards can be adjusted to any height of space wanted between shelves; shelves do not sag; width of shelving can be changed by changing size of Brackets and shelf boards without taking down the Bars, as the different sized Brackets all work in the same Bar; shelves can more easily be kept clean of dust; the wall behind the shelves can be papered; they are adapted to any kind of business; they look better, are more durable, and the longer they are used the better they are liked. A large number of testimonials show the estimation in which they are held by those using them.

## Exports.

SHIPMENTS PER STEAMSHIP STRATHDON, JUNE 19, 1891, FOR SYDNEY, NEW SOUTH WALES (Concluded).

By Alfred Field & Co.— $\frac{1}{2}$  barrel Electric Lamps, 3 packages Electric Goods.

By W. H. Crossman & Bro.—183 dozen Hatchets, 15 dozen Axes, 70 dozen Rifles, 13,000 Metallic Cartridges, 4 cases Agricultural Implements.

By Arnold, Cheney & Co.—4 boxes Drills.

By Hartley & Graham.—7 cases Metallic Cartridges, 1 case Empty Cartridge Shells, 1 case Fire Arms, 1 case Shot Cases.

By R. W. Cameron & Co.—11 cases Hardware.

FOR MELBOURNE.

By Wm. E. Peck.—3 packages Plated Ware, 3 cases Hardware.

FOR BRISBANE.

By Wm. E. Peck.—3 packages Lamp Goods.

PER BARK OSBERGER, JUNE 19, 1891, FOR ADELAIDE, AUSTRALIA.

By R. W. Forbes & Son.—1 case Carriage Bolts, 10 packages Hardware.

By Alfred Field & Co.—4 cases Plated Ware, 1 case Carpet Sweepers, 2 cases Agate Iron-ware.

By Wm. E. Peck.—22 packages Plated Ware. By R. H. Dana & Co.—3 dozen Scoops, 3 cases Pumps, 2 cases Hardware, 33 cases Axes, 3 cases Miter Boxes, 2 cases Oil Stones, 9 cases bolts, 1 case Scythes, 5 cases Agricultural Implements.

By R. W. Cameron & Co.—11 cases Refrigerators.

By John A. Gifford.—2 packages Hardware, 6 packages Carriage Hardware.

By Waller A. Wood Mowing and Reaping Machine Company.—80 packages Mowers, 60 packages Reapers, 60 packages Harvesters and Binders, 18 packages Hay Rakes.

By Hartley & Graham.—45,000 Cartridges.

By Meriden Britannia Company.—4 boxes Silver-Plated Ware.

By Collins & Co.—80 dozen Edge Tools.

By Rogers, Smith & Co.—12 packages Silver-Plated Ware.

By Meriden Britannia Company.—3 packages Silver-Plated Ware, 7 packages and 1 box Silver-Plated Ware.

By Edward Miller & Co.—8 packages and 8 barrels Lamp Goods.

Henry W. Peabody & Co.—4 cases Meat Choppers, 1 case Wire Goods, 11 packages Hardware, 1 case Cork Pullers, 1 case Plated Ware, 1 case and 6 packages Hardware, 3 dozen Wringers, 24 packages Hardware, 4 dozen Spades, 2 packages Lampware, 57 packages stoves, 1 case Cork Pullers, 2 cases Granite Ware, 2 cases Mouse Traps, 1 case Money Drawers, 8 cases Wringers, 1 case Fire Arms, 1 case Egg Beaters, 1 case Picture Cord, 2 cases Traps, 1 case Traps, 30 packages Hardware, 11 crates Stoves, 1 case Wire Cloth, 34 crates Stoves, 4 dozen Wringers, 1 case Wire Cloth, 7 cases Hardware, 10 cases Nails, 22 cases Hardware, 4 cases Wringers, 1 case Granite Ware, 8 crates Stoves, 3 cases Hardware.

By W. H. Crossman & Bro.—12 cases Iron Nails, 1 box Knives, 1 barrel Hardware, 4 cases Pump Parts, 17 packages Hay Rakes, 4 cases Hardware, 1 case Lamp Goods, 1 case Iron Locks, 35 cases Hardware, 5 bundles Sieves, 4 cases Wringers, 5 cases Furnishing Hardware, 1 case Bush Hooks, 3 cases Wringer parts, 12 cases Scales, 20 boxes Grindstone Fittings, 1 case Hardware, 4 packages Lamp Goods, 10 Carbines.

By McLean Bros. & Rigg.—1 dozen Planes, 240 pounds Hardware, 2 cases Bolts, 1 case Hoes, 1500 pounds Nails, 9 dozen Wrenches, 48 dozen Rat Traps,  $\frac{1}{2}$  dozen sets Sad Irons,

1 case Axes, 8 dozen Wrenches, 10 dozen Cow Bells, 5 gross Rat Traps, 4 dozen Wringers, 20 dozen Axes, 12 dozen Wrenches, 1 case Bolts, 1 case Pistol Cartridges, 2 cases Oil Stoves, 2 packages Pumps, 2 cases Axes, 14 cases Flows, &c., 10 cases Axes, 1 case Sad Iron Stands, 1 case Braces, 5 cases Wringers, 10 cases Axes, 600 pounds Nails.

PER BARK GLENORA, JUNE 27, 1891, FOR ADELAIDE, AUSTRALIA.

By Arkell & Douglas.—245 cases Axes, 1 case Plated Ware, 21 crates Stoves, 19 cases Wringers, 14 cases Axes, 3 cases Agate Ware, 11 packages Mowers, 4 cases Mangles, 37 packages Meat Choppers, 1 case Pencils, 34 cases Grindstone Fixtures, 12 packages Tools.

By Winchester Repeating Arms Company.—70 Guns, 25 sets Tools, 5500 Metallic Cartridges, 20,000 Cartridge Shells.

By W. H. Crossman & Bro.—20 dozen Axes.

By Henry W. Peabody & Co.—3 cases Pumps, 123 packages Stoves, &c., 1 case Carpet Sweepers, 10 packages Hardware, 55 cases Wringers, &c., 74 packages Wheelbarrows, 1 case Lead Pencils, 30 cases Agate Ware, 34 cases Lampware.

By Edward Miller & Co.—70 packages Lamp Goods.

By Australasian-American Shipping Company.—8 cases Forges, 9 cases Harrows, &c., 36 cases Harrows and Levelers, 182 cases Harrows, &c., 3 cases Hoes and Forks, 13 cases Axes, 11 cases Hardware.

By Fairbanks & Co.—1 box Scales.

By Tower & Lyon.—2 cases Lemon Squeezers.

By Rogers, Smith & Co.—6 cases Silver-Plated Ware.

By Meriden Britannia Company.—5 boxes Silver-Plated Ware.

By Hartley & Graham.—90 cases Metallic Cartridges.

PER BARK LEIF, JUNE 25, 1891, FOR PORT NATAL, SOUTH AFRICA.

By Corner Bros.—159 cases Tools.

By Rumsey & Co.—1 box Pump parts.

By Henry W. Peabody & Co.—7 cases Plow parts, 4 packages and 3 cases Farming Implements, 1 case Oil Stones, 14 packages Farming Implements, 1 case Pumps, 2 boxes Hardware, 6 crates Shellers.

By Combs, Crosby & Eddy.—5 packages Scrapers, 15 crates Corn Shellers, 1 Copy Press, 2 Stoves, 1 dozen Lamps.

By C. Walter & Co.—15 cases Pumps.

By W. H. Crossman & Bro.—5 cases Agricultural Implements and 6 cases parts, 1 case Hardware, 250 reels Barb Wire, 44 cases Agricultural Implements, 5 cases Axes, 3 crates Ladders, 500 reels Barb Wire, 12 packages Agricultural Implements and 17 cases parts, 12 cases Hardware, 6 crates Hoes, 12 packages Agricultural Implements and 10 packages parts, 10 packages Hardware, 3 cases Agricultural Implements and 5 packages parts, 100 reels Barb Wire, 5 crates Churns, 1 case Plow parts.

## Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

While the general distribution contrasts very little with what is customary at this season of the year, the movements in some lines have been rather fuller than during the preceding week. The advance in corrodors' price for White Lead appears to have dispelled the idea entertained of late in many quarters that lower rates on this Pigment, as well as on cheaper varieties, should follow the late reduction in cost of Linseed Oil, and appears also to have prompted purchases by many buyers who had permitted their stocks to run low in expectation of lower prices. As matters stand the reduced cost of Oil is offset by higher prices for Pig Lead, the full rates current for Zinc and absence of any decline in prices of materials employed in the manufacture of so called cheap Paints.

**White Lead.**—The advance of  $\frac{1}{2}$ ¢ in corrodors' prices at a time when many buyers were inclined to look for a change in the other direction caused some surprise, particularly in view of the fact that manufacturers of inferior Pigment have claimed considerable increase in the sale of their specialties during the past six months. The advance would indicate that outside

competition is not formidable in the eyes of the Lead Trust and the change in the schedule making the price for lots of 500 pounds (instead of 1000 pounds as formerly) the same as for 5 tons, appears to be advantageous to many jobbers and well received by distributors generally. The new list, which applies to White Lead, Red Lead and Litharge, follows:

	White Lead.		In Oil. Kegs.
	Dry Barrels.	Kegs.	
In lots less than 500 pounds.....	7 ¢	7 $\frac{1}{2}$ ¢	7 $\frac{1}{2}$ ¢
In lots of 500 pounds to 5 tons.....	6 $\frac{3}{4}$ ¢	7 ¢	7 ¢
In lots of 5 tons to 12 tons.....	6 $\frac{3}{4}$ ¢	6 $\frac{3}{4}$ ¢	6 $\frac{3}{4}$ ¢
In lots of 12 tons and over.....	6 $\frac{3}{4}$ ¢	6 $\frac{3}{4}$ ¢	6 $\frac{3}{4}$ ¢
<b>Red Lead and Litharge.</b>			
	Barrels and half barrels.		Kegs.
	Barrels.	half barrels.	
In lots less than 500 pounds.....	7 $\frac{1}{4}$ ¢	7 $\frac{1}{4}$ ¢	7 $\frac{1}{4}$ ¢
" of 500 pounds to 5 tons.....	6 $\frac{3}{4}$ ¢	7 ¢	7 ¢
" " 5 tons to 12 tons.....	6 $\frac{3}{4}$ ¢	6 $\frac{3}{4}$ ¢	6 $\frac{3}{4}$ ¢
" " 12 " and over.....	6 $\frac{3}{4}$ ¢	6 $\frac{3}{4}$ ¢	6 $\frac{3}{4}$ ¢

Terms, net cash for lots of less than 500 pounds; larger quantities, 60 days, or 2 $\frac{1}{2}$ % discount for cash if paid in ten days from date of invoice.

**Zinc.**—For domestic Oxide there has been nothing more than a routine demand, but the filling of back orders absorbs the production very closely. The supply of foreign brands is also well taken up. Prices are without change, but very firm all along the line.

**Colors.**—No new feature has developed in this line. Orders come along rather slowly, as usual at this season of the year, but the distribution is represented as being all that could reasonably be calculated upon, and prices have undergone no radical changes.

**Miscellaneous.**—There is now a very good supply of Block Chalk here, and prices are a shade easier. The situation in Whiting and Putty is unchanged. Clays generally are rather slow of sale and move at about former prices.

## Oils and Turpentine.

The past week has been an uneventful one in this branch of trade. In view of the fact that the price of flaxseed has further declined, and the Western crushers not identified with the National Company are still free sellers, buyers of Linseed Oil move very cautiously, despite the comparatively low prices now ruling. On the other hand, a rather higher level of prices for lard has served to harden prices for Lard Oil, and incidentally give more tone to the market for Cotton-Seed products. However, neither circumstance has prompted freer action on the part of buyers. In point of fact imperative wants seem to be the sole guide to operations at the present time, and business is as tame in the lines specified as in others that are devoid of special features favoring either buyer or seller.

**Linseed Oil.**—Prices for Western flaxseed are again lower, and evidence is wanting that the pressure brought to bear by the "trust" interest has forced independent crushers to retreat from their former position. In point of fact, the general situation is a great deal the same as it was a fortnight ago, and, pending developments buyers follow a very conservative course, as though apprehensive that another cut in prices may be announced at any moment. No changes have been made by either local or out-of-town crushers, however, during the week under review.

**Cotton-Seed Oil.**—Crude product has been selling very fairly in moderate size parcels at 30¢ @ 31¢ for prime quality and 26¢ @ 29¢ for "off" grade. Exporters have manifested more interest in the refined Oils, and a slightly better home-trade demand is also noted. Business is held in check, however, by a margin of about 2¢ difference between buyers' and

sellers' views on values for round lots. The market undoubtedly shows better tone, but no actual advance on last week's prices has been secured.

**Lard Oil.**—Under the influence of a stronger market for raw material prices for Lard Oil have ruled firmer, although showing no radical change. Home distribution has proceeded in about the usual manner, and export purchases, while slightly increased, are not above the average.

**Fish Oils.**—Reports from the Menhaden fishing indicate that the catch is still rather backward. The combined Oil manufacturers therefore offer very indifferently, and only unimportant quantities come along from outside sources. Pending developments buyers operate very cautiously, so that altogether the market may properly be termed a "waiting" one, with prices somewhat uncertain.

**Sperm and Whale Oils.**—A lot of 285 bbls. crude Sperm Oil has been sold here recently at 67½¢, which price shows a considerable decline from late "nominal" rates. The manufactured Oils, while quoted as heretofore, may be had a shade cheaper. Whale Oils are wholly unchanged.

**Miscellaneous.**—Arrivals of Ceylon Coconut Oil have been liberal, but the greater portion was sold previously and spot lots are held at former prices, although parcels to arrive appear somewhat cheaper. Olive, Palm and Saponified Oils are steady at former prices but quiet.

**Spirits Turpentine.**—There has been scarcely any variation in price during the past week and the market, while quiet, shows fairly good tone, although stocks have accumulated somewhat in first hands.

#### A Novelty in Aluminum Production.

In the production of aluminum and its alloys, or other metals of equally refractory character, by means of the electric current, the ore is fused and decomposed, and the oxygen thus liberated attacks the containing crucible and the electrodes, which are usually made of carbon, by means of which the current is introduced, and rapidly wastes them away. The material of the electrodes and crucible is thus made to act as a reducing agent, and the process of electric smelting is rendered expensive. In order to avoid this loss Mr. Thomas L. Willson of Brooklyn, the electrical engineer of the Willson Aluminum Company, has devised a method of introducing a deoxidizing agent in the form of a hydrocarbon gas, so that it shall be interposed between the liberated oxygen and the surfaces of the crucible and electrodes. This method, as described by the *Electrical Engineer*, comprises a hearth of brick work, having an opening within which the crucible is set resting upon a carbon plate built into the hearth, and forming the bottom of the opening. The positive and negative terminals of the dynamo are connected, respectively, with the carbon plate and the carbon pencil. The carbon electrode is made tubular, the duct through it constituting a gas passage. The upper end of the carbon rod has united to it an iron pipe which is connected to the supply of gas. In the bottom of the crucible is placed a quantity of broken copper, and on top of this a layer of alumina in the form of a nearly pure corundum. The cover is then placed over the crucible and luted down, and the carbon pencil thrust through it and pressed down through the layer of corundum till its tip touches the copper. After the current has been started by bringing the carbon pencil in contact with the copper, the carbon pencil is lifted slightly to strike the arc, and as the copper fuses it is lifted still higher until the maximum arc is formed.

This arc is then maintained stationary. At the same time the gas is turned on, and during the operation the pump is kept running at sufficient speed to supply the desired quantity of gas at the proper pressure. This pressure should be sufficient to overcome any pressure existing in the furnace, and to cause a slight blowing out of the gaseous products of combustion through the vent. The heat of the arc first fuses the copper and sets it into ebullition, partially vaporizing it. As the heat becomes more intense the alumina is decomposed, its oxygen being set free and immediately combining

capital stock \$100,000, by Thomas H. White, Howard White, D'Arcy Porter, James B. Clyne and J. D. Chiro.

#### Standard Apple Slicer.

Tripp Bros. & Co., Sodus, N. Y., are offering an apple slicer, as shown in Fig. 1. It is referred to as being constructed on an entirely new plan. The fruit is carried through the knives by means of a conveyor composed of links 4 inches square and connected by steel rods passing through

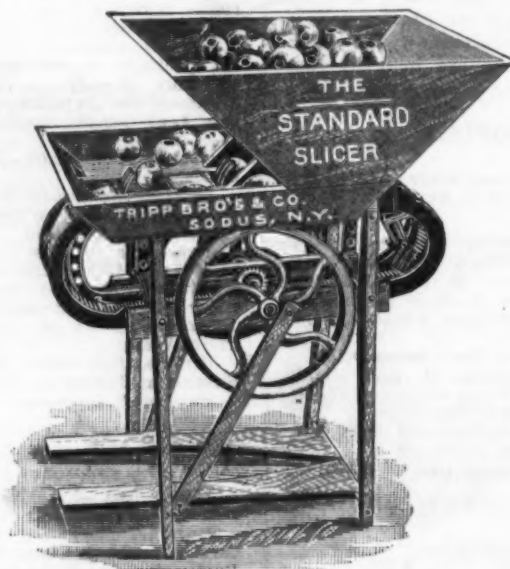


Fig. 1.—Standard App's Slicer.

with the hydrocarbon gas pumped in and forming carbonic acid carbonic oxide and steam, which escape through the vent. The aluminum, which is freed from its combination with oxygen, at once alloys with the copper. Throughout the operation the copper is vaporized by the intense heat and the copper vapors circulate within the crucible, becoming condensed against the comparatively cool sides and streaming down as liquid copper through the mass of corundum, whereby a circulation is created through the latter, and as rapidly as the corundum is fused and its oxygen driven off, the copper combines with the aluminum. The operation consumes from 15 minutes to two hours, depending upon the character of the corundum, the proportions of the ingredients and the strength of the current. When the corundum has been wholly fused and melted down and its oxygen eliminated, there remains in the crucible a bath of molten aluminum bronze, which is poured and tapped out of the crucible. A special type of dynamo is employed, with the enormous capacity of 750,000 watts at 530 revolutions per minute, or 1000 horsepower. The special feature of this machine is that the brushes are placed directly against the outer surface of the armature bars, the commutator, as such, being done away with. This reduction process has been operated experimentally, and will be put into regular use at Leaks-ville, N. C., for the extraction of pure aluminum and its alloys. It is believed by the promoters that by the new process, driven by water power, it will be possible to produce aluminum both pure in quality and at a considerably reduced cost.

Certificates of incorporation were filed with the Secretary of State recently by the Cleveland Machine Screw Company,

the joints at the corners. On the ends of these steel rods are small rolls which run on an iron track carrying the conveyor or belt smoothly and without friction. The inner side of these links or sections is provided with teeth, which form, when connected, a continuous rack, into which meshes a small gear wheel which propels it. This conveyor passes through the center of the table, and the hopper is placed in such a position that the apples feed down freely on both sides, thus making it very convenient to place them upon the conveyor with either or both hands. The



Fig. 2.—Links and Teeth.

machine is also provided with a double treadle, so that a person standing can tread with either foot or sitting can tread with both feet. This is considered a great improvement, as it renders slicing very easy work. Fig. 3 shows a section of the conveyor and a pusher passing under the knives. The pusher is curved where it presses against the fruit, instead of being straight. This arrangement brings the pressure against the apple close to the knife and forms a shear blade, which cuts a clean slice entirely through. The machine is described as being durable and as running easily. It can be run by power, if desired. The knives are of brass 1½ inches wide, and sharpened on both edges. They can be reversed, thus making one set of knives equal to two sets.



**Safety Check-Rein Clasp.**

The Check-Rein Clasp Mfg. Company, 134 Grand avenue, Milwaukee, Wis., are

come in contact with the liquid are of brass, making it practical for using any of the insecticides, emulsions, arsenites, fungicides or ammoniacal mixtures now in common use for saving fruit, foliage and

power of the inflating valve, enables it to throw a continuous steady stream 50 feet, or a steady spray for 30 seconds or more after the operator stops pumping. The pump is referred to as being neat in design, very compact, strong and durable, nothing liable to get out of repair or wear out that could not be replaced at a cost of a few cents. The entire weight of the pump complete is 4 pounds. When boxed ready for shipment 7 pounds.

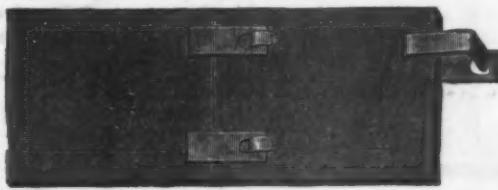


*Safety Check-Rein Clasp.*

introducing a check rein clasp, as illustrated herewith. The plunger is continually pressed against the hook by means of a spiral spring which forms the clasp. The end of the plunger, as well as the rein of the clasp, is leather cushioned to prevent injury to even the most expensive hooks. The adjustment of the clasp is automatic, requiring no effort to put it on or take it from the hook. The manufacturers claim that the clasp is self-adjusting to any hook; that it can be handled without removing the gloves, and that it is impossible for any horse to uncheck himself with this clasp. They are furnished in japan, nickel, bronze and gold plated, and are made in three different shapes or styles, designed to fit any check rein or hook made.

**The Solid Link Belt Coupler.**

Holdsworth & Kerns, Spencerville, Ohio, are introducing a belt coupler, as illustrated herewith. It is made of a fine quality steel, and is referred to as not tearing out as it grips the belt like a vise. The manufacturers claim that they run smoothly; being thin and tough, they conform to the shape of the smallest pulley; that they make no jar; that they run over a tightener smoothly and without noise; and that they will last as long as a belt. They are also recommended for use as Larness menders, as they clinch readily.



*The Solid Link Belt Coupler.*

For fastening rings to awnings they are made of brass, to prevent rusting.

**Little Gem Spraying Pump.**

Field Force Pump Company, Lockport, N. Y., are introducing a spray pump, as illustrated herewith. The pump is made entirely of brass—the working parts, discharge and connecting tubes, plunger, rod and air chamber, so that all parts (except the rubber hose and valve packing) that

flowers from destruction by insects and fungus. It is supplied with two brass nozzles, one for a round or solid stream;

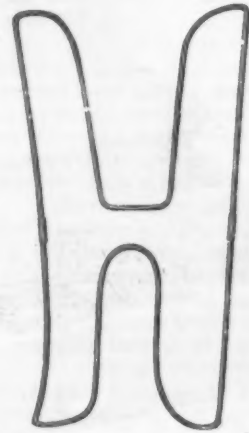


*Little Gem Spraying Pump.*

the other, their Combination Vermorel, which is described as throwing a fine misty spray, using only a small amount of liquid

**The Covert Pant Stretcher.**

Covert Mfg. Company, West Troy, N. Y., are introducing a pant stretcher, as illustrated herewith. This is made of steel



*The Covert Pant Stretcher.*

wire, and is described as being light and compact. It is made in sections so that it can be taken apart, and occupies little room when traveling. The manufacturers claim that it is simple and cannot get out of order; that it can be adjusted in the pants in a few seconds; that it adapts itself to the gradual yielding of the fabric, and cannot injure the garment, and that as it is applied inside the pants, it does not leave any mark on the exterior of the garment.

**J. R. Baker's Improved Eaves-Trough Hanger.**

J. R. Baker & Son, Kendallville, Ind., are offering the trade a trough hanger, as illustrated herewith. The strap that goes under the trough is of heavy galvanized iron, while the balance of the hanger is strong hoop iron. The point is made that while it is very readily attached to or re-



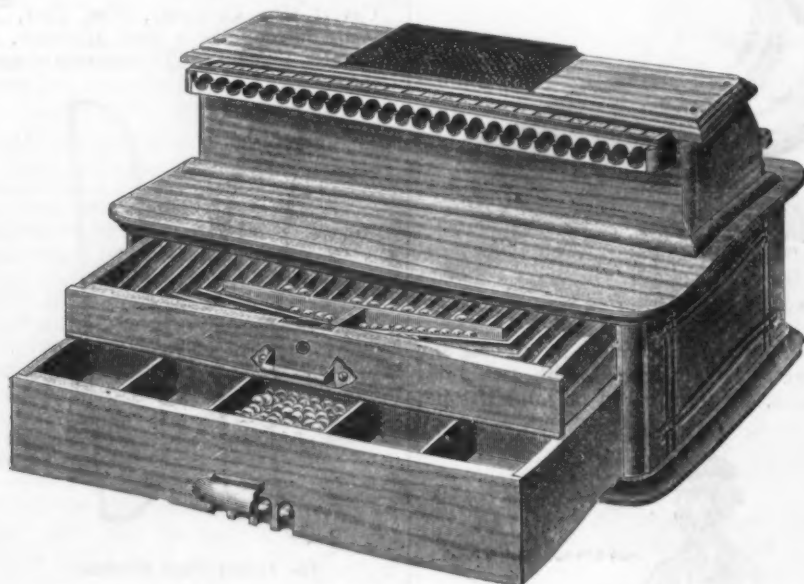
*J. R. Baker's Improved Eaves-Trough Hanger.*

moved from the trough it is impossible for it to work loose, as there is neither solder, bolts or nuts used either in the construction or in fastening it to the trough. It is claimed that the eye that clasps the bead is so constructed that the trough is not damaged in the least by attaching the hanger.

**Simplex Cash Register and Indicator.**

Jno. M. Waddel Mfg. Company, Greenfield, Ohio, are introducing a cash register, as illustrated herewith. When a sale is made a marble is dropped into one of the series of holes at the top of the register corresponding to the amount of the purchase. For example, should the sale be 5 cents a marble would be dropped into the first opening to the left, which is denoted by a large, plain figure in front of it. The marble rolls down a slotted incline and

is referred to as being as simple as a ten-pin alley, having no cogs, ratchets, springs or complicated parts to get out of order. The cash drawer is supplied with a combination lock, susceptible of changes; and a cathedral gong as an alarm, which is sounded when the drawer is opened. The manufacturers claim that the register possesses all the advantages of other machines, and contains within itself many new and valuable features; also that it will plainly and conspicuously indicate and register every sale made during the day or days, and show at a glance the



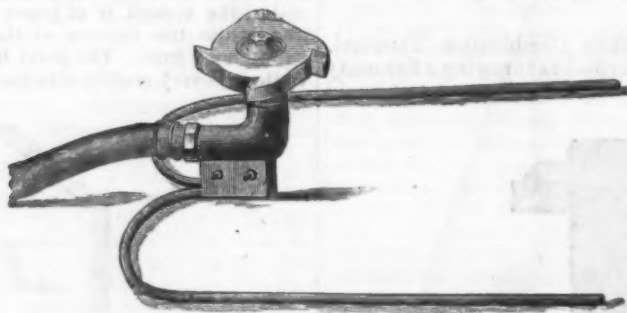
*Simplex Cash Register and Indicator.—Rear View.*

instantly comes in contact with the metal strip nearly balanced on a shaft, and under the weight of the marble the heavy end drops and the light end is displayed with a card attached bearing the amount. The marble is held by a swinging bar and by a simple device the cash drawer may be closed without releasing the marble. When the next sale is made and the cash drawer is opened, the bar is swung sufficiently to allow the marble to escape and the metal strip to drop to its normal position. The little marble then continues on its journey to accomplish another object. It is dropped from the swinging bar into a trough, down which it rolls until the end

amount of cash taken in, in the different denominations of money. The manufacturers warrant the register for ten years to record from 100 to over 700 sales per day; and allude to the low price at which it is sold.

**Mikado Lawn Sprinkler.**

Russell & Koeberle, Los Angeles, Cal., are introducing a sprinkler and irrigator, as illustrated herewith. The sprinkler is made entirely of brass, the box part being hollow and formed of two pieces, held to-



*Mikado Lawn Sprinkler.*

is reached. There are 26 of these troughs in the register tray, which is kept locked by the proprietor of the store, each denoting a different denomination of money. Each marble registers the amount of sale in this way. For instance, should there be eight marbles in the 40 cent trough the last figure visible in this trough would be \$3.20. On the opposite or front side, a narrow strip of glass runs across the entire front, near the top of the register, behind which the amount of the last sale is indicated. The register is 26 inches long, 20 inches wide and 15 inches high. Its construction

together with four brass screws. There are perforations at the four points from which the water is distributed. The runners to which the sprinkler is attached allows the position of the sprinkler to be changed without turning off the water, simply by pulling on the hose. The manufacturers claim that there is little or no friction; that it is strong and durable; that it throws an even spray in every direction; that it can readily and easily be taken apart for cleaning; that it irrigates rapidly, and that it will wet the entire area of a circle 30 to 40 feet in diameter. Testi-

monials bring out the fact that the Mikado is giving perfect satisfaction to those who are using them.

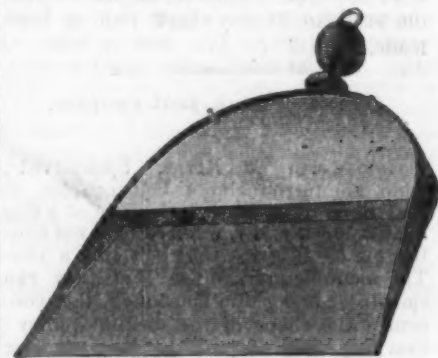
**Reversible Dust Pan.**

Patent Development Company, 35 Warren street, New York, are introducing a dust pan, as illustrated herewith. Figs. 1



*Fig. 1.—Reversible Dust Pan.*

and 2 show opposite sides of the same pan. The side shown in Fig 1 provides a pocket into which the dust may be swept, while the reverse side, Fig. 2, is designed for getting into corners, &c. The pointed wires at the back hold the pan stationary and in the desired position while the dust is being swept into it without stooping. The construction of the pan with the brace through the center renders it less likely to become broken or to get out of shape than is the case with the ordinary pan. The pan is provided with a black enameled wood handle having a wire eye for hang-



*Fig. 2.—Dust Pan Reversed.*

ing up. The pan is made of tin, finished in lacquer, and is referred to as durable, so that with ordinary care it should last for years.

**Didn't Know How to Spell It.**

Hardware Dealer (to New Bookkeeper, who is on trial)—Mr. Pens, I have just sold the last tailor's goose we have in stock; telegraph to Iron & Co. for a dozen immediately, and let's see how quickly you can hustle them through, now.

The New Bookkeeper (innocently): "Yes, sir. I'll send the telegram at once."

He takes up a block of telegraph blanks and writes:

"Iron & Co., New York—Freight us immediately 12 tailor—"

And here he stops.

He chews his pencil, twirls his watch chain, unbuttons his vest, curls his moustache, hunts for a dictionary, and writes



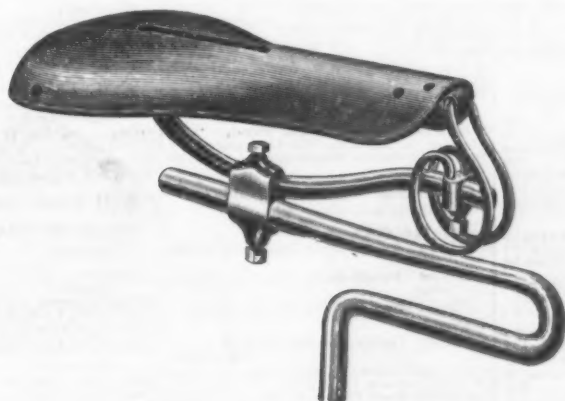
such words as these on a scrap of waste paper :

12 tailor-geese  
12 tailor's geese  
12 tailor-geeses  
12 tailor's goose  
12 tai—

Now he begins to mop his forehead, and look at his watch—when all of a sudden

### Bolte Spring Fork Saddle.

The Sercombe & Bolte Mfg. Company, 94 Wisconsin street, Milwaukee, Wis., are offering the trade a safety saddle, as illustrated herewith. It is stated that the spring post will fit every safety bicycle having a  $\frac{3}{4}$ -inch round seat post. The fork



Bolte Spring Fork Saddle.

he smiles a large-sized smile, and loses no time in taking a clean blank, and writing some words which seem to please him greatly.

About an hour later the order clerk of Iron & Co., New York, files the following order telegram :

"Iron & Co., New York—Freight us immediately one tailor's geese and 11 others. LEAD & SONS."—Puck.

### Eagle Wagon Jack.

T. C. Ward, Rochester, N. Y., is placing on the market a wagon jack, as illustrated in Fig. 1. The jack is made of iron, the handle being half-oval iron,

is made for machines in which the post goes in on a slant, or in which it goes in straight. The manufacturers claim that the saddle absorbs all rear-wheel vibration; that it is adjustable to any weight of rider; that it has no side motion, and that it has a most simple and effective canting arrangement.

The United States Iron and Tin Plate Company, Demmler, Pa., manufacturers of U. S. brand American bright tin plates, have placed an order with the A. Garrison Foundry Company of Pittsburgh for the erection of two additional tin-plate mills, with necessary rolls and housings. The engine to drive these mills



Fig. 1.—Eagle Wagon Jack.



Fig. 2.—Eagle Jack in Use.

folded to fit each side of the upright pipe, and is connected by means of two links with the movable piece on top. Fig. 2 shows the jack as it appears in use. It is referred to as being simple in mechanism and very powerful, as well as neat, light and strong.

Theron Strong, assignee of G. W. Stetson & Co., has not yet filed the schedules of the suspended firm, nor is he prepared to make any statement concerning the character of the operations which caused their collapse.

is already on hand. This firm have also decided to erect a new tinning house to contain six tinning stacks. The building will be entirely of iron, corrugated iron being used for the sides and roof, and the frames will also be of iron. The building will be 50 feet wide by 60 feet long. They also propose to erect in the near future another building 80 feet wide by 120 feet long, equipped with engine of 400 horsepower to drive three more tin mills, contract for which will be let in a short time. An addition 24 x 120 feet is also being made to their machine shops. These ad-

ditions and improvements are all being made with the view of materially increasing their capacity for the manufacture of bright tin plates.

The Basic City Car Works Company of Basic City, Va., announce that they will soon be ready to manufacture cars. They will also be able to make castings up to 10 tons and heavy forgings.

The buildings intended for the Williamson Free School of the Mechanical Trades, for which the late Isaiah V. Williamson gave \$2,000,000, are now in course of erection 10 miles from Philadelphia, and applications for admission are now being received. The superintendent's residence is built of granite and cedar wood. The main edifice is the administration building. This is constructed of brick and granite, and is of the Byzantine style of architecture. The shop for industrial trades is of brick. Next to this is the boiler house, engine and dynamo room and laundry, overtopped by a chimney stack more than 100 feet high. The three dormitory buildings will also be of brick. The architects of all the buildings are Furness, Evans & Co. In accordance with the stipulations in Mr. Williamson's gift, the sum of \$425,000 of the \$2,000,000 is to be used in the purchase of land, the construction of the buildings, &c. The price of the land was \$47,000, and \$250,000 will be expended on the buildings and the balance on improvements and extensions. The remaining amount, \$1,700,000, is an endowment fund, and only the interest can be expended. The course for the mechanical trades will be from two to three years.

### CONTENTS.

Immigration into the United States.....	45
The Neuert Automatic Steam Engine. II.....	45
Carriages for the 12-inch Mortars.....	46
Organization of a Torpedo Service.....	46
American-Chilian Trade.....	47
National Tube Works.....	47
Iron Chimneys.....	47
Natural Gas for Chicago.....	48
The Virginia Investment Association.....	48
Two Government Cranes.....	49
The Hall Gas Process.....	49
Testing Railroad Materials.....	49
The Baackes Wire-Nail Company. Illus.....	50
Terminal Facilities of New York.....	51
The Love Electric Street Car System.....	52
Drawback on Carriage and Tire Bolts.....	53
District Steam Systems.....	53
New Publications.....	54
Casting Plate Slabs. Illustrated.....	54
The Caulet Armored Turret. Illustrated.....	55
A Chicago Elevated Road Scheme.....	56
Dynamo For Electroplating. Illustrated.....	56
Treasury Decisions.....	57
The Week.....	57
English vs. American Pig Iron.....	58
Editorials.....	
Unanimously Conservative.....	59
The Charcoal Iron Makers.....	59
Farm Labor.....	59
South American Trade and the Illinois Central.....	59
Obituary.....	60
Correspondence.....	60
Limestone Statistics.....	62
Iron and Steel in Great Britain.....	63
Washington News.....	64
Prominent Asbestos Manufacturers Consolidate.....	64
Trade of the Amazon Valley.....	64
Manufacturing: Iron and Steel, Machinery, Hardware, Miscellaneous.....	65
Trade Report: Chicago, Cincinnati, Philadelphia, Pittsburgh, Detroit, St. Louis, Cleveland, New York, Metal Market, Financial, Coal Market, Louisville, British Iron and Metal Markets, Imports.....	66-71
A Five-Day Steamer.....	71
Hardware: Condition of Trade. Notes on Prices, Arrangement of Stores—Illustrated, What the Trade Say, Remittance Blanks, Miller, Sloss & Scott, Trade Items, Gray, Fall & Co., Price-Lists, Circulars, &c., Marking Prices, It Is Reported—Adjustable Ratchet Bar and Bracket Store Shelving Irons—Illustrated, Exports, Paints and Colors.....	72-78
A Novelty in Aluminum Production.....	78
Standard Apple Slicer. Illustrated.....	78
Safety Check-Rein Clasp. Illustrated.....	79
The Solid Link Belt Coupler. Illustrated.....	79
Little Gem Spraying Pump. Illustrated.....	79
The Covert Pant Stretcher. Illustrated.....	79
J. B. Baker's Improved Eave-Trough Hanger. Illustrated.....	79
Simplex Cash Register and Indicator. Illus.....	80
Mikado Lawn Sprinkler. Illustrated.....	80
Reversible Dust Pan. Illustrated.....	80
Didn't Know How to Spell It.....	81
Eagle Wagon Jack. Illustrated.....	81
Bolte Spring Fork Saddle. Illustrated.....	81
Current Hardware Prices.....	82-87
Current Metal Prices.....	88

JULY 8, 1891.

Buck Bros.....	80
Cold Chisels, #2 .....	12@10



**Chucks—**

Beach Pat. each, \$5.00.....	20%
Morse's Adjustable, each, \$7.00, 20@20¢	20%
Danbury..... each, \$6.00, 30@30¢	20%
Syracuse, Bais Pat.....	25%
Graham Patent.....	33½%
Skinner's Patent Chucks.....	33½%
Combination Lathe Chucks.....	33½%
Universal Lathe Chucks.....	40%
Independent Lathe Chucks.....	40%
Drill Chucks.....	15%
Union Mfg. Co.,	
Victor.....	\$8.50, 25%
Combination.....	40%
Universal.....	40%
Independent.....	40%

**Churns.**

Tiffin Union, each, 5 gal. \$3.25; 7 gal., \$3.75; 10 gal., \$4.25.	
McDermid Star Barrel Churn, each, 6 gal., \$2.60; 10 gal., \$2.75; 15 gal., \$3.00; 20 gal., \$3.25.	

**Clamps—**

R. I. Tool Co.'s Wrought Iron.....	25%
Adjustable, Cincinnati.....	15¢10¢
Adjustable, Hammers.....	15%
Adjustable, Stearns.....	80¢80¢10¢
Stearns' Adjustable Cabinet and Corner.....	30¢30¢10¢
Cabinet, Sargent's.....	60¢80¢10¢
Carriage Makers' Sargent's.....	70¢10¢
Carriage Makers' P., B. & W. Co. 40¢10¢	
Eberhard Mfg. Co.....	40¢50¢40¢10¢
Parallel, C. H. Bealy & Co.....	25%
Warner's.....	40¢10¢40¢10¢25%
Saw Clamps, see Vices, Saw Filers'.	
Carpenters', Cincinnati.....	25¢10¢

**Cleavers.**

Butchers'.	
Bradley's.....	25¢80¢
L. & J. White.....	20¢25%
Bentley's.....	40¢40¢54%
New Haven Edge Tool Co.....	40%
P., S. & W.....	33½¢25¢33½¢10%
Schuler Bros.....	30%
Schulte, Lohoff & Co.....	40¢40¢54%

**Clips—**

Norway, A.M.C. 14 & 5-16.....	55¢55¢54%
2nd grade Norway Axle, 14 & 5-16.....	65¢54%
Superior Axle Clips.....	65¢54¢70%
Norway Spring Bar Clips, 5-16.....	50¢54¢55%
Wrought-Iron Felloe Clips.....	5¢, 5¢
Steel Felloe Clips.....	5¢, 5¢
Baker Axle Clips.....	25%

**Cloth and Netting, Wire—See Wire, &c.****Cockeyes.....****Cocks, Brass.....****Coffee Mills—See Mills, Coffee.****Collars, Dog, &c.**

Medford Fancy Goods Co.....	40¢10%
Embossed, Gilt, Pope & Steven's list.....	30¢10%
Brass, Pope & Steven's list.....	40%
Chapman Mfg. Company.....	50¢10¢60%

**Combs, Curry.**

Fitch's.....	50¢10¢50¢10¢10%
Rubber, per doz \$10.00.....	20%
Perfect.....	50%
Kellogg's.....	50¢10%
Sweet & Clark's.....	50¢10%

**Compasses, Dividers, &c.—**

Compasses, Calipers, Dividers, 70¢70¢10%	
Bemis & Call Co.'s	
Dividers.....	60¢5%
Compasses & Calipers.....	50¢5%
Wing and Inside or Outside.....	60¢5%
Double.....	60%
(Call's Pat. Inside).....	30%
Excelsior.....	50%
J. Stevens & Co.'s.....	25¢10%
Starrett's	
Spring Calipers and Dividers.....	25¢10%
Lock Calipers and Dividers.....	25%
Combination Dividers.....	25%

**Coopers' Tools—See Tools, Coopers'.****Cord—**

Sash.	
Common.....	5¢, 10¢ @ 11¢
Patent, good quality.....	5¢, 12¢ @ 12¢
White Cotton Braided, fair.....	5¢, 24¢ @ 25¢
Common Russia Sash.....	5¢, 12¢ @ 13¢
Patent Russia Sash.....	5¢, 14¢
Cable Laid Italian Sash.....	5¢, 24¢ @ 25¢
India Cable Laid Sash.....	5¢, 12¢
Silver Laid.....	25%
A Quality, White, 50¢.....	25%
A Quality, Drab, 50¢.....	25%
B Quality, White, 30¢.....	10%
B Quality, Drab, 35¢.....	10%
Sylvan Spring Extra Braided White, 34¢	
Sylvan Spring Extra Braided Drab, 30¢	
Scupper Idem, Braided, White.....	30¢
Egyptian, India Hemp, Braided.....	25¢
Massachusetts, White.....	25¢
Samson—	
Braided, White Cotton, 50¢.....	30¢30¢54%
Braided, Drab Cotton, 50¢.....	30¢30¢54%
Braided, Italian Hemp, 50¢.....	30¢30¢54%
Braided, Linen, 80¢.....	30¢30¢54%
Tate's Cotton Braided, White.....	5¢, 25¢

**Wire Picture.**

Braided or Twisted.....	75¢10%
-------------------------	--------

**Wormscrews—See Screws, Cork.****Corn Knives and Cutters—See Knives, Corn.****Crackers, Nut—**

Table (H. & B. Mfg. Co.).....	40%
Blake's Pattern.....	5¢ doz \$2.00, 10%
Turner & Seymour Mfg. Co.....	50%

**Cradles—**

Grain.....	50¢54¢20¢50¢10¢25%
------------	--------------------

**Crays.**

White Crays, 5¢ gross.....	10%
D. M. Stewart Mfg. Co., Metal Work-ers, 5¢ gr. \$2.50.....	25%
D. M. Stewart Mfg. Co., Rolling Mill, 5¢ gr. \$2.50.....	25%
See also Chalk.	

**Crow Bars—See Bars, Crow.****Curry Combs—See Combs, Curry.****Curtain Pins—See Pins, Curtain.****Cutters—****Meat.**

Dixon's 5¢ doz.....	40¢5%
Nos.....	1 2 3 4
Woodruff's 5¢ doz.....	40¢5%
Nos.....	100 150
Hales Pattern 5¢ doz.....	15.00 18.00
Nos.....	11 12 13 14
American.....	\$27.00 \$35.00 \$45.00
Nos.....	1 2 3 4 5 6
Each.....	\$5 \$7 \$10 \$25 \$50 \$60
Enterprise.....	10 12 22 32 42
Each.....	\$3 \$2.50 \$4 \$5 \$15
Great American Meat Cutter.....	\$14
Nos.....	112 116 118 120 122
Each.....	\$2.00 \$2.75 \$3.00 \$2.50 \$4.00
Miles' Challenge 5¢ doz.....	40¢45¢10%
Nos.....	1 2 3 4
Home No. 1.....	5¢ doz, \$26.00, 55¢10%
Draw Cut, each:	
Nos.....	5 2 3 4 5
Each.....	\$50 \$75 \$80 \$225.....20¢25%
Great American.....	30%
Beef Shavers (Enterprise).....	20¢10¢30%
Little Giant.....	30%
Chadborn's Smoked Beef Cutter, doz.....	\$60.00

**Tobacco.**

Champion.....	20¢10¢30%
Wood Bottom.....	5¢ doz \$5.00 \$5.25
All Iron.....	5¢ doz \$4.25
Nashua Lock Co.'s.....	5¢ doz, \$18.00 50¢55%
Sargent's.....	5¢ doz, \$24.50 55¢10%
Acme.....	5¢ doz \$20.00, 40%

**Washer.**

Smith's Pat.....	5¢ doz \$12.00, 20¢10¢10%
Johnson's.....	5¢ doz \$11.00, 35¢4%
Penny's 5¢ doz Pol. \$15; Jap'd, \$16.....	55%
Appleton's.....	5¢ doz \$14.00, 60¢10%
Bonney's.....	30¢10%
Cincinnati.....	35¢10%

**Dampers, &c—**

Dampers, Buffalo.....	40¢10%
Buffalo Damper Clips.....	40¢10%
Crown Damper.....	40%
Excelsior.....	40¢10%

**Diggers, Post Hole, &c—**

Samson Post Hole Digger, 5¢ doz \$36.00.....	25%
Fletcher Post Hole Augers, 5¢ doz \$36.00, 20%	
Eureka Diggers.....	5¢ doz \$12.50 \$14.00
Lead's.....	5¢ doz \$8.00 \$9.00
Vaughan's Post Hole Auger, 5¢ doz.....	\$13.00 \$14.00
Kohler's Little Giant.....	5¢ doz, \$18.00
Kohler's Hercules.....	5¢ doz, 16.00
Kohler's New Champion.....	5¢ doz, 16.00
Schneider.....	5¢ doz, \$18.00
Ryan's Post Hole Diggers.....	5¢ doz \$24.00
Cronk's Post Bars, 5¢ doz \$60.00.....	50¢54¢50¢10%
Gibbs Post Hole Digger, 5¢ doz \$30.00, 50%	
Imperial, 5¢ doz \$16.....	45%

**Dividers—**

See Compasses.	
----------------	--

**Dog Collars—See Collars, Dog, &c.****Door Springs—See Springs, Door.****Drawers.**

Money, 5¢ doz.....	\$18¢20
--------------------	---------

**Drawing Knives—See Knives, Drawing.****Drills and Drill Stocks—**

Blacksmiths'.....	each \$1.75
Blacksmiths' Self-Feeding, each \$7.50, 20%	
Breast, P. S. & W.....	40¢10%
Breast, Wilson's.....	30¢5%
Breast, Miller's.....	each \$3.00, 25%
Breast, Bartholomew's.....	each \$2.50, 25%
Ratchet, Merrill's.....	25¢10¢40%
Ratchet, Ingersoll's.....	25%
Ratchet, Parker's.....	30¢20¢5%
Ratchet, Whitney's.....	30¢10%
Ratchet, Weston's.....	30¢25%
Ratchet, Moore's Triple Action.....	35¢30%
Ratchet, Curtis & Curtis.....	30%
Whitney's Hand Drill, Plain, \$11.00.....	30¢10%
Adjustable, \$12.00.....	30¢10%
Wilson's Drill Stocks.....	10%
Automatic Boring Tools.....	\$1.75 \$1.85
Twist Drills—	
Morse.....	50¢10¢5%
Standard.....	50¢10¢5%
Syracuse (Metal) 15¢.....	50¢10%
Cleveland.....	50¢10¢5%
Williams.....	50¢10¢5%
New Process.....	50¢10¢5%
Graham's Pat. Groove Shank 50¢10¢5%	

**Drill Bits.—See Augers and Bits.****Drill Chucks.—See Chucks.****Dripping Pans—See Pans, Dripping.****Drivers, Screw.**

Douglas Mfg. Co.....	20¢30¢10%
Diston's.....	60%
Buck Bros.....	30%
Stanley R. & L. Co.'s.....	65¢10%
Turnbush Handles.....	60¢10%
Sargent & Co.'s	
No. 1 Forged Blade.....	60¢10¢10%
Nos. 20, 30 and 60.....	60¢10¢10%
P. S. & W.....	70%
Knapp & Cowles:	
No. 1.....	60¢20¢70%
No. 2.....	60¢10¢10¢70¢5%
No. 3.....	60¢5¢60¢10%
Nos. 4 and 60, Acme and Ideal.....	50%
Stearns.....	60¢50¢10¢5%
Gay & Parsons.....	30%
Champion.....	25¢10%
Clark's Pat.....	30¢33½%
Crawford's Adjustable.....	30%
Ellrich's Socket and Ratchet.....	25¢54%
Allard's Spiral, new list.....	25%
Kelly's Common Sense 5¢ doz \$7.00, 50¢10%	
Syracuse Screw-Driver Bits.....	30¢30¢5%
Screw-Driver Bits.....	5¢ doz \$5.00

**Screw-Driver Bits, Parr's.....**

gro \$6.25	
Fray's Hol. Hdie. Sets, No. 3, \$12.00.....	25¢35¢10%
P. D. & Co.'s all Steel.....	50%
Cincinnati.....	35¢10%
Brace Screw Drivers.....	25¢10%
Buck Bros' Screw-Driver Bits.....	

**Egg Beaters.—See Beaters, Egg.****Egg Pouchers.—See Pouchers, Egg.****Electric Bell Sets.—See Bells, Electric.****Emery.—No. 4 to No. 54 to Flour, CF.**

46 gr. 150 gr. F. F. F.	
Kegs, 5¢ doz.....	5¢ 21¢
5¢ doz.....	5¢ 21¢
10¢ doz.....	5¢ 21¢
10¢ cans, 10.....	5¢ 21¢
10¢ cans, 10.....	5¢ 21¢
than 10.....	10¢ 74¢

**Enameled and Tinned Ware—****See Ware, Hollow.****Escutcheon Pins—See Pins, Escutcheon.****Escutcheons.****Door Lock.—Same dis as Door Locks.****Door Lock.—Same dis as Door Locks.****Expanded Metal.****List No. 5.**

Lathing.....	10%
Fencing, Painted Sheets.....	20%
Penny's Painted Sheets.....	20%
Door Mats, Galvanized.....	25%
Window Guards, Paneled.....	15%
Tree Guards, Paneled.....	15%

**Fasteners, Blind—**

Mackrell's, 5¢ doz.....	30¢20¢10%
Van Sand's Screw Pat., \$15 5¢ gr.....	60¢10%
Van Sand's Old Pat., \$15.00 5¢ gr.....	55¢10%
Washburn's Old Pattern, 5¢ gr.....	\$9.00
Merriman's.....	new list
Austin & Eddy No. 2008 5¢ gr.....	\$9.00
Security Gravity, 5¢ gr.....	\$9.00

**Faucets.—**

Fenn's.....	40%
Bohren's Pat. Rubber Ball.....	25%
Fenn's Cork Stops.....	33½%
Star.....	60%
Fray's Pat. Petroleum.....	40¢54¢25%
B. & L. B. Co.	
West's Lock, Open and Shut Key.....	50%
Star Metal Plug, new list.....	40%
Lockport, Metal Plug, reduced list.....	60%
Metallic Key, Leather Lined.....	60¢10¢10%
Cork Lined.....	70¢5¢70¢10%
Burnside's Red Cedar.....	60%
Burnside's Red Cedar, bbl lots.....	60¢10%
John Sommers'.....	
Western Best Block Tin Key.....	40%
IXI, 1st quality, Cork Lined.....	50%
Diamond Lock.....	40%
Perfection, Fla. Red Cedar.....	60%
Goodenough Cedar.....	50%
Boss Metallic Key.....	60%
Reliable Cork Lined.....	60%
Western Pattern Cork Lined.....	60%
Self-Measuring.....	
Enterprise, 5¢ doz \$50.00.....	20¢10%
Lane's, 5¢ doz \$36.00.....	25¢10%
Victor, 5¢ doz \$36.00.....	25¢10%

**Felice Plates—See Plates, Felice.****Fifth Wheels.—**

Derby and Cincinnati.....	45¢54%
Brewster.....	50¢54%

**Files—**

Domestic—	
Nicholson Files, Rasps, &c.....	60¢10¢60¢10¢5%
Nicholson (X. F.) Files.....	25%
Nicholson's Royal Files (Second).....	75%
(extra prices on certain sizes)	
G. & H. Barnett (Black Diamond).....	60¢10¢60¢10¢5%

**Files—**

Eagle.....	60¢10¢5¢60¢10%
Other makers, best brands.....	60¢10¢60¢20%
Fair brands.....	60¢10¢10¢70¢5%
Second quality.....	70¢10¢75¢10%
Chelsea Horse Rasps.....	60¢75¢50¢10%
McCauley's Horse Rasps.....	50¢10%
Chelsea Horse Rasps, Hand Cut.....	50¢10%
Imported—	
Moss & Gamble.....	list, April 1, 1883, 15%
Butcher.....	Butcher's list, 20%
Stubs.....	Stubs list, 25¢30%
Turton's.....	Turton's list, 20¢25%
Graevs Horse Rasps.....	American list, 6%

**Fixtures.**

Grindstone—	
Sargent's Patent.....	70¢10%
Reading Hardware Co.....	30¢10%
P., S. & W. Co.....	50¢10%

**Fluting Machines—See Machines, Fluting.****Fluting Scissors—See Scissors, Fluting.****Fodder Squeezers—See Squeezers, Fodder.****Forks.**

Hay, Manure, &c., Asso List, 55¢54¢65¢10%	
Hay, Manure, &c., Phila. List, 60¢60¢54%	
Plated, see Spoons.	

**Frames—****Saw—**

White Vermont.....	5¢ gr \$9.00 @ 10.00
Red, Polished and Varnished.....	5¢ doz \$1.50, 25%

**Screen, Window and Door—**

Roggin's Latches..... 50¢ doz 50¢ doz 50¢  
 Bronze Iron Drop Latches..... 50¢ doz 50¢ doz 50¢  
 Jap'd Store Door Handles—Nuts, 1.32;  
 Plate, 1.10; no Plate, .88—net  
 Barn Door, 50¢ doz 1.40 10¢ doz  
 Chest and Lifting..... 70¢

## Wood—

Saw and Plane..... 40¢ 10¢ 40¢ 10¢ 50¢  
 Hammer, Hatchet, Axe, Sledge, &c..... 40¢  
 Brad Axl..... 50¢ gr 2.00  
 Hickory Firmer Chisel, ass'd..... 50¢ gr 4.50  
 Hickory Firmer Chisel, large..... 50¢ gr 5.00  
 Apple Firmer Chisel, ass'd..... 50¢ gr 5.00  
 Apple Firmer Chisel, large..... 50¢ gr 6.00  
 Socket Firmer Chisel, ass'd..... 50¢ gr 3.00  
 Socket Firmer Chisel, large..... 50¢ gr 5.00  
 J. S. Smith & Co.'s Pat File..... 50¢  
 File, assorted..... 50¢ gr 7.75  
 Auger, assorted..... 50¢ gr 5.00  
 Auger, large..... 50¢ gr 7.00  
 Pat. Auger, Ives..... 50¢ 10¢  
 Pat. Auger, Douglas..... 50¢ 1.25  
 Pat. Auger, Swan's..... 50¢ 1.00  
 Hoe, Rake, Shovel, &c..... 50¢ 10¢

## Hangers—

Barn Door, old patterns..... 50¢ 10¢ 10¢ 70¢  
 Barn Door, New England..... 50¢ 10¢ 10¢ 70¢  
 Samson Steel Anti-Friction..... 50¢  
 Orleans Steel..... 50¢  
 Hamilton Wrought Wood Track..... 50¢  
 U. S. Wood Track..... 50¢  
 Champion..... 50¢ 10¢  
 Rider and Wooster, Medina Mfg. Co.'s  
 List..... 70¢  
 Climax Anti-Friction..... 50¢  
 Climax Anti-Friction for Wood Track..... 50¢  
 Smith for Wood Track..... 50¢  
 Seed's Steel Arm..... 50¢  
 Challenge, Barn Door..... 50¢  
 Sterling..... 50¢ 50¢ 10¢  
 Victor, No. 1, 1.15.00; No. 2, 1.15.00; No.  
 3, 1.15.00..... 50¢ 25¢  
 Cheritree..... 50¢ 10¢  
 Kidder's..... 50¢ 10¢ 60¢  
 The Boss..... 50¢ 10¢  
 Best Anti-Friction..... 50¢ 10¢  
 Duplex (Wood Track)..... 50¢ 10¢ 50¢  
 Terry's Pat., 50¢ doz pr. 4 in., 10.00; 5 in.,  
 12.00..... 50¢ 10¢  
 Terry's Steel Anti-Friction Leader 50¢ 10¢  
 Terry's Steel Anti-Friction Ideal..... 50¢ 10¢  
 Cronk's Patent, Steel Covered..... 50¢ 50¢  
 Wood Track Iron Clad, 50¢ ft. 10¢

Carrier Steel Anti-Friction..... 50¢ 10¢  
 Architect, 50¢ set 60.00..... 20¢  
 Holipe..... 50¢ 10¢  
 Felix, 50¢ set 44.50..... 20¢  
 Richards..... 50¢ 30¢ 10¢  
 Lane's Standard..... 50¢ 50¢ 10¢  
 Lane's New Standard..... 50¢ 50¢ 10¢  
 Ball Bearing Door Hanger..... 50¢ 10¢ 50¢  
 Warner's Pat..... 50¢ 10¢ 20¢ 10¢ 10¢  
 Stearns' Anti-Friction..... 50¢ 10¢ 20¢ 10¢ 10¢  
 Stearns' Challenge..... 50¢ 10¢ 25¢ 10¢ 10¢  
 Faultless..... 50¢ 40¢ 40¢ 10¢  
 American, 50¢ set 50.00..... 20¢ 10¢  
 Rider & Wooster, No. 1, 62¢; No. 2,  
 75¢..... 40¢  
 Paragon, No. 1, 2 and 3..... 25¢ 10¢  
 Cincinnati..... 25¢ 10¢  
 Paragon, Nos. 5, 6, 7 and 8..... 20¢ 10¢  
 Crescent..... 50¢ 50¢ 10¢  
 Nickel Cast Iron..... 50¢  
 Nickel, Malleable Iron and Steel..... 40¢  
 Scranton Anti-Friction Single Strap..... 40¢  
 Wild West, 4 in. Wheel, 15.00; 6 in.,  
 21.00..... 40¢ 10¢ 40¢ 10¢ 50¢  
 Star..... 40¢ 10¢ 40¢ 10¢ 50¢  
 May..... 50¢ 50¢ 50¢ 10¢  
 Barry, 60.00..... 40¢ 10¢  
 Interstate..... 50¢  
 Magic..... 50¢

## Harness Snaps—See Snaps.

## Hatchets—

American Axe and Tool Co.  
 Blood's..... 15¢ 10¢  
 Hunt's..... 15¢ 10¢  
 Hurd's..... 15¢ 10¢  
 Mann's..... 15¢ 10¢  
 Peck's..... 40 & 10  
 Underhill's..... 50¢ 50¢  
 Buffalo Hammer Co..... 50¢ 50¢  
 Fayette R. Plumb..... 50¢ 50¢  
 C. Hammond & Son..... 50¢ 50¢  
 Kelly's..... 50¢ 50¢  
 Sargent & Co..... 50¢ 50¢  
 P. S. & W. Co..... 50¢ 50¢  
 Ten Eyck Edge Tool Co..... 10¢  
 Collins..... 10¢  
 Schulte, Lohoff & Co..... 50¢ 50¢ 50¢

## Hay and Straw Knives—See

## Knives.

## Hinges—

## Blind Hinges—

Parker..... 75¢ 25¢  
 Palmer..... 50¢ 50¢ 10¢  
 Seymour..... 70¢ 25¢  
 Butler..... 50¢  
 Clark's, Nos. 1, 3, 5, 40 and 60..... 75¢ 10¢ 50¢ 80¢  
 Clark's Morris Gravity..... 50¢  
 Sargent's Nos. 1, 3, 5, 11, 13..... 75¢ 10¢ 50¢ 10¢ 50¢  
 Sargent's No. 12..... 75¢ 10¢ 10¢ 50¢  
 Reading's Gravity..... 75¢ 10¢ 75¢ 10¢ 50¢  
 Shepard's..... 75¢ 10¢  
 Noiseless..... 75¢ 10¢  
 Niagara..... 80¢  
 Buffalo..... 80¢  
 Clark's Genuine Pattern..... 80¢  
 O. S. Lull & Porter..... 75¢ 10¢  
 Acme, Lull & Porter..... 75¢ 10¢  
 Queen City Reversible..... 75¢ 10¢ 50¢ 70¢  
 Clark's Lull & Porter..... 75¢ 10¢ 25¢  
 2, 2 1/2, 3..... 75¢ 10¢ 25¢  
 North's Automatic Blind Hinges, No.  
 2, for Wood, 40.00; No. 3, for Brick,  
 11.50..... 10¢

## Gate Hinges—

Western..... 50¢ doz 44.00, 60¢  
 N. E..... 50¢ doz 47.00, 55¢  
 N. E. Reversible..... 50¢ doz 50.00, 55¢ 10¢  
 Clark's, Nos. 1, 2, 5..... 50¢ 10¢ 50¢  
 N. Y. State..... 50¢ doz 50.00, 55¢ 10¢  
 Automatic..... 50¢ doz 50.00, 55¢  
 Common Sense..... 50¢ doz pair 44.50, 50¢  
 Seymour's..... 50¢ 45¢ 10¢  
 Shepard's..... 50¢ 10¢ 50¢  
 Reed's Latch and Hinges..... 50¢ 12.00, 50¢

## Spring Hinges—

Geer's Spring and Blank Butts..... 40¢  
 Union Spring Hinge Co.'s List March

Acme..... 50¢  
 J. S..... 25¢ 10¢  
 Empire and Crown..... 20¢  
 Hero and Monarch..... 55¢  
 American, Gem, and Star..... 20¢  
 Oxford..... 20¢  
 Barker's Double Acting..... 25¢  
 Union Mfg. Co..... 25¢  
 Bommer's..... 30¢  
 Buckman's..... 15¢ 20¢  
 Chicago..... 80¢  
 Willes..... 10¢  
 Devore's..... 40¢  
 Rex..... 40¢  
 Reliable..... 80¢  
 Champion..... 80¢  
 Bardsley's Patent..... 40¢  
 Stearns..... 50¢ 10¢  
 Niagara, Holdback pattern, per  
 gross..... 14.00

## Wrought Iron Hinges

List February 14, 1891.

Strap and T..... 50¢ 10¢  
 Corrugated Strap and T..... 50 & 10  
 Screw Hook and..... 6 to 12 in., 50¢  
 14 to 20 in., 50¢  
 22 to 36 in., 50¢  
 Strap..... 14 in., 50¢  
 16 in., 50¢  
 18 in., 50¢  
 20 in., 50¢  
 22 in., 50¢  
 24 in., 50¢  
 26 in., 50¢  
 28 in., 50¢  
 30 in., 50¢  
 32 in., 50¢  
 34 in., 50¢  
 36 in., 50¢  
 38 in., 50¢  
 40 in., 50¢  
 42 in., 50¢  
 44 in., 50¢  
 46 in., 50¢  
 48 in., 50¢  
 50 in., 50¢  
 52 in., 50¢  
 54 in., 50¢  
 56 in., 50¢  
 58 in., 50¢  
 60 in., 50¢

Roller Blind Hinges, Nos. 32 and 34..... 50¢ 10¢  
 Roller Blind Hinges, Nos. 232 and 234..... 50¢ 10¢  
 Roller Blind..... 50¢ 10¢  
 Roller Blind..... 50¢ 10¢  
 Plate Hinges 18, 10 & 12 in., 50¢  
 "Providence" over 12 in., 50¢

## Hoes—

## Eye—

D. & H. Scovill..... 20¢  
 Lane's Crescent Planter Pattern..... 45¢ 50¢  
 Lane's Razor Blade, Scovill Pattern..... 30¢  
 Maynard, S. & O. Pat..... 45¢ 50¢  
 Sandusky Tool Co., S. & O. Pat..... 50¢ 10¢ 50¢  
 Am. Axe and Tool Co., S. & O..... 50¢  
 Pat..... 50¢  
 Chataanooga Tool Co., S. & O. Pat..... 50¢ 10¢  
 50¢ 10¢  
 50¢ 10¢  
 50¢ 10¢

## Handled—

Garden, Mortar, &c..... 50¢ 50¢ 50¢ 10¢  
 Planter's, Cotton &c..... 50¢ 50¢ 50¢ 10¢  
 Warren Hoe..... 50¢  
 Magic..... 50¢ 40.00

## Hog Rings and Rings—See

## Rings and Rings.

## Hoisting Apparatus—See

## Machines, Hoisting.

## Hollow-Ware—See Ware, Hollow.

## Holders.

Bag..... 50¢  
 Sprengle's Pat..... 50¢ 10¢ 10¢ 50¢  
 Bit..... 50¢  
 Extension..... 40¢ 50¢ 10¢  
 Barber's..... 40¢ 50¢ 10¢  
 Ives..... 50¢ 50¢ 10¢  
 Diagonal..... 50¢ 50¢ 10¢  
 Angular..... 50¢ 50¢ 10¢  
 File and Tool..... 50¢  
 Balx Pat..... 50¢ 40.00, 25¢  
 Nicholson File Holders..... 20¢  
 Dick's Tool Holder..... 20¢

## Hooks—

Cast Iron—  
 Bird Cage, Sargent's list..... 50¢ 10¢ 10¢  
 Bird Cage, Reading..... 50¢ 10¢ 10¢  
 Clothes Line, Sargent's list..... 50¢ 10¢ 10¢  
 Clothes Line, Reading list..... 50¢ 10¢ 10¢  
 Ceiling Sargent's list..... 50¢ 10¢ 10¢  
 Harness, Reading list..... 50¢ 10¢ 10¢ 10¢  
 Coat and Hat, Sargent's list..... 50¢ 10¢ 10¢  
 Coat and Hat, Reading..... 50¢ 10¢ 10¢ 10¢  
 Wrought Iron—  
 Cotton..... 50¢ 10¢ 10¢  
 Cotton Pat. (N.Y. Mallet & Handle W'g.)..... 50¢  
 Tassel and Picture (T. & S. Mfg. Co.)..... 50¢  
 Wrought Staples, Hooks, &c..... 50¢  
 Wire—  
 Wire Coat and Hat, Gem, list April,  
 1880..... 60¢  
 Wire Coat and Hat, Miles, list April,  
 1880..... 50¢  
 Indestructible Coat and Hat..... 45¢  
 Wire Coat and Hat, Standard..... 45¢  
 Handy Hat and Coat..... 50¢ 10¢  
 Steady Ceiling Hooks..... 50¢ 10¢  
 Atlas, Coat and Hat..... 60¢

## Miscellaneous.

Grass, No. 2, 22.00; No. 3, 22.25; No. 4, 22.50  
 Noll's Grass..... 50¢ 22.25  
 Bush..... 50¢ 50¢  
 Whiffletree—Patent..... 50¢  
 Hooks and Eyes—Malleable Iron..... 70¢ 70¢ 10¢  
 Hooks and Eyes—Brass..... 60¢ 10¢ 10¢  
 Fish Hooks, American..... 50¢  
 Bench Hooks..... 50¢  
 See Bench Stops.

## Horse Nails—See Nails, Horse.

## Horse Shoes—See Shoes, Horse.

## Hose, Rubber—

Competition..... 75¢ 75¢ 50¢  
 Standard..... 50¢ 10¢ 50¢ 10¢ 10¢  
 Extra..... 50¢ 10¢ 50¢  
 N. Y. B. & P. Co., Extra..... 25¢ 25¢  
 N. Y. B. & P. Co., Extra..... 10¢ 40¢ 50¢  
 N. Y. B. & P. Co., Dundee..... 40¢ 10¢ 50¢

## Huskers—

Blair's Adjustable..... 50¢ gr 8.00  
 Blair's Adjustable Clipper..... 50¢ gr 7.50  
 Hubbard's Solid Steel..... 50¢ 4.00

## Indurated Fiber-Ware—See

## Ware, Indurated Fiber.

## Irons.

Sad—  
 From 4 to 10, at factory..... 100¢  
 Self-Heating..... 50¢ 22.00, 22.40  
 Self-Heating, Tallow..... 50¢ 22.00, 22.40  
 Mrs. Pott's Irons..... 50¢ 50¢  
 Enterprise Star Irons..... 50¢ 50¢  
 XX Cold Handle Sad Iron..... 50¢ 50¢

Ideal Irons new list..... 50¢ 10¢ 50¢ 10¢ 10¢  
 Salamander, Irons..... 25¢  
 B. B. Sad Irons, 50¢ doz..... 30¢ 30¢  
 Combined Fluter and Sad Iron, 50¢ doz..... 15¢  
 15.00..... 15¢  
 Fox Reversible, Self-Fluter 50¢ doz 24.00  
 Chinese Laundry (N.E. Butt Co.) 8 1/2, 15¢  
 New England..... 50¢ 15¢  
 Mahony's Troy Pol. Irons..... 25¢  
 Sensible, list Jan. 91..... 50¢ 10¢ 50¢  
 Sensible Tailor's Irons..... 33 1/2¢  
 National Self-Heating..... 30¢  
 Soldering—  
 Soldering Coppers..... 50¢ 22¢ 22¢  
 Cover's Adjustable, list Jan. 1 1886..... 35¢ 25¢

## Irons, Pinking, per doz., 65¢.

## Jack Screws—See Screws.

## Jacks, Wagon.

Daisy..... 40¢  
 Victor..... 40¢

## Kettles—

Brass, Spun, Plain, list Jan. 1, '91..... 25¢ 50¢  
 Brass, Spun, Plain, W.M. list Jan. 1, '91..... 20¢  
 Enameled and Tea—See Hollow Ware.

## Keys—

Lock Ass'n list Dec. 30, 1888..... 50¢ 10¢  
 Eagle, Cabinet, &c..... 35¢ 25¢  
 Hotchkiss' Brass Blanks..... 40¢  
 Hotchkiss, Copper and Tinned..... 40¢  
 Hotchkiss' Pat. and Cab..... 35¢  
 Ratchet Bed Keys..... 50¢ 40¢ 10¢  
 Wollensak Tinned..... 50¢ 10¢

## Knife Sharpeners—See Sharpeners,

## Knives.

Butcher, Shoes, &c—  
 Wilson's Butcher Knives, list Dec. 8,  
 1890..... 25¢  
 Ames' Butcher Knives..... 25¢  
 Foster Bros. Butcher, &c..... 40¢  
 Jordan's AAA1, Butchers', list..... net  
 Nichols' Butcher Knives..... 40¢ 10¢  
 W. W. Wilson, Butcher, 6 in., 22.00; 7  
 in., 24.00; 8 in., 26.00, &c.....  
 Ames' Shoe Knives..... 20¢ 25¢  
 Ames' Bread Knives, 50¢ doz 1.50, 15¢ doz 30¢  
 Moran's Shoe and Bread..... 30¢  
 Hay and Straw..... See Hay Knives.  
 Table and Pocket..... See Cutlery.  
 Corn, Auburn Mfg. Co. Western Pat..... 2.00  
 Corn, Auburn Mfg. Co. Crescent..... 3.50

## Lawn—

## Bradley's.

## Wadsworth's.

## Drawing—

Whitby..... 75¢ 75¢ 10¢  
 P. S. & W..... 75¢ 75¢ 10¢  
 New Haven..... 50¢ 10¢ 50¢ 10¢ 50¢  
 Merrill..... 50¢ 10¢ 50¢ 10¢ 50¢  
 Douglas..... 75¢ 75¢ 50¢  
 Watrous..... 15¢ 10¢ 25¢  
 L. & J. White..... 20¢ 25¢  
 Bradley's..... 35¢  
 Adkins' Hand..... 25¢ 35¢  
 Wilkinson's Folding..... 25¢ 35¢  
 Hay and Straw.....  
 Lightning, Mrs. price 50¢ doz 15.00, 50¢  
 But jobbers cut this price freely,  
 often selling at 40¢ 45.00.  
 Wadsworth's..... 40¢ 75¢ 40¢ 10¢  
 Carter's Needle..... 50¢ 11.00, 11.50  
 Heath's..... 50¢ 13.00, 13.50  
 Auburn Hay, Com. and Spear Point..... 50¢  
 Auburn, Shutter..... 40¢  
 Noll's Hay..... 50¢ 47.00, 47.50

## Mining.

Am. (2d quality), 50¢ gr. 1 blade, 57;  
 2 blades, 112; 3 blades, 115..... net  
 Lothrop's..... 50¢ 10¢  
 Smith's, 50¢ doz, Single, 22.00; Double, 23  
 40¢ 45¢  
 Knapp & Cowles..... 50¢ 10¢ 50¢  
 Buffalo Adjustable..... 50¢ 30.00, 25¢  
 Buffalo Double Adj'table, 50¢ doz 30.00 25¢

## Knobs—

Door Mineral..... 60¢ 50¢  
 Door Por. Jap'd..... 70¢ 75¢  
 Door Por. Nickel..... 22.00, 22.25  
 Door Por. Plated, Nickel..... 22.00, 22.25  
 Drawer, Porcelain..... 60¢ 10¢ 50¢ 10¢ 10¢  
 Hemacite Door Knobs..... 40¢ 10¢ 50¢  
 Yale & Towne Wood, list Dec. 1885..... 40¢  
 Furniture, Plain..... 75¢ 50¢ inch, 10¢  
 Furniture, Wood Screws..... 25¢ 10¢  
 Base, Rubber Tip..... 70¢ 10¢ 50¢  
 Picture, Judd's..... 60¢ 10¢ 10¢ 70¢  
 Picture, Sargent's..... 70¢ 10¢  
 Picture, Hemacite..... 35¢ 50¢  
 Sutter, Porcelain..... 60¢ 10¢  
 Carriage, 50¢ doz..... 50¢ 10¢  
 Bardsley's Wood Door, Shutter, &c..... 40¢

## Ladies.

Melting, Sargent's..... 50¢ 10¢  
 Melting, Reading..... 35¢ 10¢  
 Melting, Monroe's Pat..... 50¢ 40.00, 40¢  
 Melting, P. S. & W..... 35¢ 10¢ 40¢  
 Melting, Warner's..... 30¢

## Lanterns.

Plain with Guards, 50¢ doz..... 43.75, 44.00  
 Lift Wire, with Guards..... 44.00, 44.25  
 Square Plain, with Guards..... 43.75, 44.00  
 Sq. Lift Wire, with Guards..... 44.50

## Police Lanterns (including packages).

2 1/2-inch Bull's-eye Police regular..... 50¢ 30.00  
 3-inch Bull's-eye Police regular..... 50¢ 33.00  
 3-inch Bull's-eye Police flash light..... 50¢ 44.00  
 3-inch Bull's-eye Police flash light..... 50¢ 44.00

## Lawn Mowers—See Mowers, Lawn.

## Leaders, Cattle.

Humason, Beckley & Co.'s..... 70¢  
 Sargent's..... 60¢ 10¢  
 Hotchkiss..... 30¢  
 Peck, Stow & W. Co..... 60¢ 10¢

## Lemon Squeezers—See Squeezers,

## Lemon.

## Lifters, Transom.

Wollensak's:  
 Class 3 and 4, Bronze Iron..... 50¢  
 Class 3 and 4, Bronze Metal..... 25¢  
 Class 3 and 4, Brass..... 25¢  
 Sky Light Lifters..... 50¢  
 Crown, Eagle and shield..... 50¢  
 Reiber's, list Feb. 20, 1891..... 50¢  
 Bronzed Iron Rods..... 50¢ 10¢ 10¢ 50¢  
 Brass, Real Bronze or Nickel Plate..... 30¢

Excelsior..... 50¢ 10¢ 25¢  
 Shaw's..... 50¢ 10¢  
 Payson's:  
 Universal..... 50¢  
 Solid Grip..... 50¢  
 Imperial..... 50¢ 10¢

## Lines—

Cotton and Linen Fish, Draper's..... 50¢  
 Draper's and Tate's Chalk..... 50¢  
 Draper's Mason's Linen, 84 ft., No. 1,  
 11.25; No. 2, 11.75; No. 3, 12.25; No. 4,  
 12.75; No. 5, 13.25..... 25¢  
 Cotton Chalk..... 50¢  
 Samson Cotton, No. 4, 12.25; No. 4 1/2, 12.50,  
 10¢  
 Silver Lake, Braided, No. 3, 0; No. 1,  
 1.65.00; No. 2, 1.70.00; No. 3, 1.75.00  
 50¢  
 Mason's Linen, No. 3, 11.50; No. 4,  
 12.00; No. 4 1/2, 12.50..... 25¢  
 Mason's Colored Cotton..... 45¢  
 Wire Clothes..... Nos. 18 19 20  
 100 ft..... 40.00 35.50 33.00  
 Ventilator Cord, Samson Braided,  
 White or Drab Cotton..... 50¢ 7.50, 20¢

## Locks, &amp;c.—

Cabinet—  
 Eagle, Gaylord Par- } list March, '84, rev  
 ker and Corbin..... } Jan. 1, '85, 30¢ 25¢  
 Deits, Nos. 36 to 39..... 40¢  
 Deits, Nos. 51 to 63..... 40¢ 10¢  
 Deits, Nos. 86 to 96..... 30¢  
 Stoddard Lock Co..... 30¢ 30¢  
 "Champion" Night Latches..... 40¢  
 Barnes Mfg. Co..... 40¢ 40¢ 10¢  
 Eagle and Corbin Trunk..... 25¢ 25¢  
 "Champion" Cab. and Combin..... 35¢ 40¢  
 Yale..... net prices  
 Romer's..... 25¢

## Door Locks, Latches, &amp;c.

R. & E. Mfg. Co., list Mar. 30,  
 1890..... 50¢ 10¢ 75¢  
 Mallory, Wheeler & Co., list  
 July, '88..... lower net  
 Sargent & Co., list Aug. 1, '88  
 Reading Hardware Co., list  
 Feb. 2, '88..... prices  
 often  
 made.  
 Brittan, Graham & Mathes, list Jan.  
 1890..... 60¢ 10¢ 10¢  
 Perkins' Burglar Proof..... 60¢ 25¢  
 Plate..... 35¢ 25¢  
 Barnes Mfg. Co..... 40¢ 40¢ 10¢  
 Yale..... net prices  
 Deits Flat Key..... 30¢  
 L. & C. Round Key Latches..... 30¢ 10¢  
 L. & C. Flat Key Latches..... 35¢ 10¢  
 Romer's Night Latches..... 15¢  
 Brooklyn Latches..... 50¢ 10¢  
 Sheparson or U. S.  
 Seed's N. Y. Hap Lock..... 35¢

## Padlocks—

List June 10, 1891..... 042'  
 Norw. ch Lock Mfg. Co., old list..... 70¢ 25¢  
 Yale Lock Mfg. Co.'s..... net prices  
 Eagle..... 35¢ 25¢  
 Eureka, Eagle Lock Co..... 40¢ 25¢  
 Romer's, Nos. 0 to 91..... 30¢  
 Romer's Scandinavian, &c., Nos. 100 to  
 506..... 50¢ 15¢  
 A. E. Deits..... 40¢  
 Champion Padlocks..... 40¢  
 Hotchkiss..... 30¢  
 Star..... 40¢  
 Horseshoe..... 50¢ 40¢ 40¢ 10¢  
 Barnes Mfg. Co..... 40¢ 40¢ 10¢  
 Noll's..... 30¢  
 Sargent's Pat..... 40¢ 40¢ 10¢  
 Scandinavian..... 40¢ 40¢ 10¢  
 E. T. Frain's Keystone Scandinavian.  
 Nos. 110, 120, 130 and 140..... 50¢ 10¢  
 Other Nos..... 50¢  
 Ames Sword Co. up to No. 150..... 40¢  
 Ames Sword Co. above No. 150..... 50¢  
 Slaymaker Barry & Co..... 50¢ 50¢  
 No. 1010 line..... 45¢ 10¢  
 No. 41 line..... 45¢ 10¢  
 No. 61 line..... 50¢ 10¢  
 No. 21 line..... 75¢

## Sash, &amp;c.



Champion Extra Thin Back Cross  
Cuts,  $\frac{3}{4}$  foot..... 31¢  
One Man Champion Cross Cuts,  $\frac{3}{4}$  ft. 40¢

Atkins' Circular Shingle and Heading  
dis 50%  
Atkins' Silver Steel Diamond X Cuts  
foot 70%  
Atkins' Special Steel Dexter X Cuts  
foot 50%  
Atkins' Special Steel Diamond X Cuts  
foot 32%  
Atkins' Champion and Electric Tooth  
X Cuts..... foot 30%  
Atkins' Hollow Back X Cuts..... foot 20%  
Atkins' Muley, Mill and Drag..... 40%  
Atkins' One-Man Saw, with handles.....  
Peace Circular and Mill..... 45%  
Peace Hand Panel and Rip..... 25%  
Peace Cross Cuts..... 45%  
Richardson's Circular and Mill..... 45%  
Richardson's X Cuts..... 45%  
Richardson's Hand, &c..... 25%  
C. R. Jennings & Co., Hand, Panel  
and Rip..... 25%  
**Jack Saws—**  
Griffin's, complete..... 40%  
Griffin's Hack Saw, Blades..... 40%  
Star Hack Saws and Blades..... 25%  
Bureka and Crescent..... 25%  
**Scroll—**  
Lester, complete, \$10.00..... 25%  
Bogers, complete, \$4.00..... 25%  
Barnes' Builders' and Cabinet Makers',  
\$15..... 25%  
Barnes' Scroll Saw Blades..... 25%  
**Saw Frames—See Frames, Saw.**  
**Saw Sets—See Sets, Saw.**  
**Saw Tools—See Tools, Saw.**  
**Scales—**  
Hatch, Counter, No. 171, good quality.....  
Hatch, Tea, No. 101..... \$21.00  
Union Platform, Plain..... \$2.00  
Union Platform, Striped..... \$2.40  
Chattillon's Grocers' Trip Scales..... 50%  
Chattillon's Eureka..... 25%  
Chattillon's Favorite..... 40%  
Family, Turnbills..... 30%  
Richie Bros.' Platform..... 40%  
**Scale Beams—See Beams, Scale.**  
**Scissors, Rusting..... 40%**  
**Scrapers—**  
Adjustable Box Scraper (S. R. & L. Co.)  
\$0.50..... 80%  
Box, 1 Handle..... \$4.00, 10%  
Box, 2 Handle..... \$6.00, 10%  
Defiance Box and Ship..... 30%  
Foot..... 50%  
Ship, Commemorative..... \$3.50 net  
Ship, R. I. Tool Co..... 10%  
**Screen Window and Door  
Frames—See Frames.**  
**Screw Drivers—See Drivers, Screw.**  
**Screws.**  
**Bench and Hand—**  
Bench, Iron..... 55%  
Bench, Wood, Beech..... \$2.25  
Bench, Wood, Hickory..... 20%  
Lag, Blunt Point, List Jan. 1, 1890, 75%  
Coach and Lag, Gimlet Point, List Jan.  
1, 1890..... 75%  
Bed..... 25%  
Hand Rail, Sargent's..... 60%  
Hand Rail, H. & F. Mfg. Co..... 70%  
Hand Rail, Am. Screw Co..... 70%  
Jack Screws, Millers Falls List..... 60%  
Jack Screws, P. S. & W..... 30%  
Jack Screws Sargent..... 60%  
Jack Screws Stearns..... 40%  
**Cork—**  
Humason & Beckley Mfg. Co. 40%  
Williamson's..... 35%  
Howe Bros. & Hulbert..... 30%  
**Machines**  
Flat Head, Iron..... 55%  
Round Head, Iron..... 50%  
**Wood—**  
List January 1, 1891.  
Flat Head Iron..... 75%  
Round Head Iron..... 67%  
Flat Head Brass..... 75%  
Round Head Brass..... 65%  
Flat Head Bronze..... 75%  
Round Head Bronze..... 65%  
Rovers' Drive Screws..... 85%  
**Scroll Maws—See Saws, Scroll.**  
**Scythes.**  
Grain..... 40%  
Gram..... 40%  
**Scythe Snaths—See Snaths, Scythe  
Mets.**  
**Axi and Tool.**  
Aiken's Sets, Axi and Tools,  
No. 20, \$10.00; No. 1, \$12.50; No. 3,  
\$12.50; No. 4, \$12.50..... 25%  
Fray's Adj. Tool Hdl., No. 1, \$12.50;  
No. 2, \$12.50; No. 3, \$12.50..... 25%  
Miller's Falls Adj. Tool Hdl.,  
No. 1, \$12.50; No. 2, \$12.50; No. 3,  
\$12.50..... 25%  
Henry's Combination Haft..... \$0.50  
Brad Sets,  
No. 45, \$10.50; No. 43, \$12.50; No. 42,  
\$12.50; No. 41, \$12.50; No. 40, \$12.50;  
No. 39, \$12.50; No. 38, \$12.50; No. 37,  
\$12.50; No. 36, \$12.50; No. 35, \$12.50;  
No. 34, \$12.50; No. 33, \$12.50; No. 32,  
\$12.50; No. 31, \$12.50; No. 30, \$12.50;  
No. 29, \$12.50; No. 28, \$12.50; No. 27,  
\$12.50; No. 26, \$12.50; No. 25, \$12.50;  
No. 24, \$12.50; No. 23, \$12.50; No. 22,  
\$12.50; No. 21, \$12.50; No. 20, \$12.50;  
No. 19, \$12.50; No. 18, \$12.50; No. 17,  
\$12.50; No. 16, \$12.50; No. 15, \$12.50;  
No. 14, \$12.50; No. 13, \$12.50; No. 12,  
\$12.50; No. 11, \$12.50; No. 10, \$12.50;  
No. 9, \$12.50; No. 8, \$12.50; No. 7, \$12.50;  
No. 6, \$12.50; No. 5, \$12.50; No. 4, \$12.50;  
No. 3, \$12.50; No. 2, \$12.50; No. 1, \$12.50;  
No. 0, \$12.50..... 25%  
Square..... \$1.00  
Round..... \$1.00  
Buck Bros..... \$1.00  
Cannon's Diamond Point..... \$1.00  
**Rivet.**  
Regular List..... 50%  
**Saw—**  
Stillman's Genuine..... \$0.50  
Stillman's Imita..... \$0.50  
Common Lever..... \$0.50  
Morrell's No. 1, \$15.00; No. 2, \$15.00;  
No. 3, \$15.00; No. 4, \$15.00; No. 5,  
\$15.00; No. 6, \$15.00; No. 7, \$15.00;  
No. 8, \$15.00; No. 9, \$15.00; No. 10,  
\$15.00; No. 11, \$15.00; No. 12, \$15.00;  
No. 13, \$15.00; No. 14, \$15.00; No. 15,  
\$15.00; No. 16, \$15.00; No. 17, \$15.00;  
No. 18, \$15.00; No. 19, \$15.00; No. 20,  
\$15.00; No. 21, \$15.00; No. 22, \$15.00;  
No. 23, \$15.00; No. 24, \$15.00; No. 25,  
\$15.00; No. 26, \$15.00; No. 27, \$15.00;  
No. 28, \$15.00; No. 29, \$15.00; No. 30,  
\$15.00; No. 31, \$15.00; No. 32, \$15.00;  
No. 33, \$15.00; No. 34, \$15.00; No. 35,  
\$15.00; No. 36, \$15.00; No. 37, \$15.00;  
No. 38, \$15.00; No. 39, \$15.00; No. 40,  
\$15.00; No. 41, \$15.00; No. 42, \$15.00;  
No. 43, \$15.00; No. 44, \$15.00; No. 45,  
\$15.00; No. 46, \$15.00; No. 47, \$15.00;  
No. 48, \$15.00; No. 49, \$15.00; No. 50,  
\$15.00; No. 51, \$15.00; No. 52, \$15.00;  
No. 53, \$15.00; No. 54, \$15.00; No. 55,  
\$15.00; No. 56, \$15.00; No. 57, \$15.00;  
No. 58, \$15.00; No. 59, \$15.00; No. 60,  
\$15.00; No. 61, \$15.00; No. 62, \$15.00;  
No. 63, \$15.00; No. 64, \$15.00; No. 65,  
\$15.00; No. 66, \$15.00; No. 67, \$15.00;  
No. 68, \$15.00; No. 69, \$15.00; No. 70,  
\$15.00; No. 71, \$15.00; No. 72, \$15.00;  
No. 73, \$15.00; No. 74, \$15.00; No. 75,  
\$15.00; No. 76, \$15.00; No. 77, \$15.00;  
No. 78, \$15.00; No. 79, \$15.00; No. 80,  
\$15.00; No. 81, \$15.00; No. 82, \$15.00;  
No. 83, \$15.00; No. 84, \$15.00; No. 85,  
\$15.00; No. 86, \$15.00; No. 87, \$15.00;  
No. 88, \$15.00; No. 89, \$15.00; No. 90,  
\$15.00; No. 91, \$15.00; No. 92, \$15.00;  
No. 93, \$15.00; No. 94, \$15.00; No. 95,  
\$15.00; No. 96, \$15.00; No. 97, \$15.00;  
No. 98, \$15.00; No. 99, \$15.00; No. 100,  
\$15.00..... 25%  
Leach's, No. 0, \$3.00; No. 1, \$15.00;  
No. 2, \$15.00; No. 3, \$15.00; No. 4,  
\$15.00; No. 5, \$15.00; No. 6, \$15.00;  
No. 7, \$15.00; No. 8, \$15.00; No. 9, \$15.00;  
No. 10, \$15.00; No. 11, \$15.00; No. 12,  
\$15.00; No. 13, \$15.00; No. 14, \$15.00;  
No. 15, \$15.00; No. 16, \$15.00; No. 17,  
\$15.00; No. 18, \$15.00; No. 19, \$15.00;  
No. 20, \$15.00; No. 21, \$15.00; No. 22,  
\$15.00; No. 23, \$15.00; No. 24, \$15.00;  
No. 25, \$15.00; No. 26, \$15.00; No. 27,  
\$15.00; No. 28, \$15.00; No. 29, \$15.00;  
No. 30, \$15.00; No. 31, \$15.00; No. 32,  
\$15.00; No. 33, \$15.00; No. 34, \$15.00;  
No. 35, \$15.00; No. 36, \$15.00; No. 37,  
\$15.00; No. 38, \$15.00; No. 39, \$15.00;  
No. 40, \$15.00; No. 41, \$15.00; No. 42,  
\$15.00; No. 43, \$15.00; No. 44, \$15.00;  
No. 45, \$15.00; No. 46, \$15.00; No. 47,  
\$15.00; No. 48, \$15.00; No. 49, \$15.00;  
No. 50, \$15.00; No. 51, \$15.00; No. 52,  
\$15.00; No. 53, \$15.00; No. 54, \$15.00;  
No. 55, \$15.00; No. 56, \$15.00; No. 57,  
\$15.00; No. 58, \$15.00; No. 59, \$15.00;  
No. 60, \$15.00; No. 61, \$15.00; No. 62,  
\$15.00; No. 63, \$15.00; No. 64, \$15.00;  
No. 65, \$15.00; No. 66, \$15.00; No. 67,  
\$15.00; No. 68, \$15.00; No. 69, \$15.00;  
No. 70, \$15.00; No. 71, \$15.00; No. 72,  
\$15.00; No. 73, \$15.00; No. 74, \$15.00;  
No. 75, \$15.00; No. 76, \$15.00; No. 77,  
\$15.00; No. 78, \$15.00; No. 79, \$15.00;  
No. 80, \$15.00; No. 81, \$15.00; No. 82,  
\$15.00; No. 83, \$15.00; No. 84, \$15.00;  
No. 85, \$15.00; No. 86, \$15.00; No. 87,  
\$15.00; No. 88, \$15.00; No. 89, \$15.00;  
No. 90, \$15.00; No. 91, \$15.00; No. 92,  
\$15.00; No. 93, \$15.00; No. 94, \$15.00;  
No. 95, \$15.00; No. 96, \$15.00; No. 97,  
\$15.00; No. 98, \$15.00; No. 99, \$15.00;  
No. 100, \$15.00..... 25%

Hammer, Hotchkiss..... \$5.50, 10%  
Hammer, Bemis & Call Co.'s new Pat.  
Hammer..... 50%  
Bemis & Call Co.'s Lever and Spring  
Hammer..... 10%  
Bemis & Call Co.'s Cross Cut..... 12%  
Aiken's Genuine..... \$15.00, 50%  
Aiken's Imitation..... \$7.00, 55%  
Hart's Pat. Lever..... 20%  
Daston's Star..... 25%  
Leopold..... 40%  
Atkin's Lever..... \$10.00, 10%  
Atkin's Criterion..... \$10.00, 10%  
Croissant (Keller), No. 1, \$15.00; No. 2,  
\$24.00..... 40%  
Avery's Saw Set and Punch..... 50%  
Chieftain H. R. Co.'s Superior..... 50%  
Crescent..... \$15.00, 50%  
Sharpener, Knife.  
Parkins.  
Applewood Handles..... \$2.00, 40%  
Rosewood or Cocobolo..... \$2.00, 40%  
**Shaves, Spoke.**  
Wood..... 45%  
Bailey's (Stanley R. & L. Co.)..... 40%  
Stearns..... 30%  
Cincinnati..... 35%  
Goodell's..... \$10.00, 25%  
**Shears—**  
American (Cast) Iron..... 75%  
Barnard's Lamp Trimmers..... \$3.75  
Timmers..... 20%  
Seymour's, List, Dec. 1891..... 60%  
Heinisch's, List, Dec. 1891..... 60%  
Heinisch's Tailor's Shears..... 35%  
Cast Steel Trimmers:  
First quality..... 80%  
Second quality..... 80%  
Acme Cast Shears..... 10%  
Diamond Cast Shears..... 10%  
Clipper..... 10%  
Victor Cast Shears..... 10%  
Howe Bros. & Hulbert, Solid Forged  
Steel..... 40%  
Chicago Drop Forge & F. Co., Solid  
Steel Forged..... 60%  
Clausen Shear Co., Japaned..... 70%  
Clausen Shear Co., Nickel-plated, same list..... 60%  
Galvanic, 3 1/2 to 9 in., \$1.00 per inch  
Pruning Shears and Hooks.  
Daston's Combined Pruning Hook and  
Saw..... \$15.00, 40%  
Daston's Pruning Hook..... \$12.00, 40%  
E. S. Lee & Co.'s Pruning Tools..... 40%  
Pruning Shears, Henry's Pat., \$1.00  
Henry's Pruning Shears, \$1.00, 40%  
Wheeler, M. & C. Co.'s Combination,  
\$1.00, 40%  
Dunlap's Saw and Chisel, \$1.00, 30%  
J. Mallinson & Co., No. 1, \$5.25; No. 2, 7.25  
P. S. & W. Co..... 60%  
Timmers', &c.—  
Shears and Snips (P. S. & W.)..... 30%  
Snips, J. Mallinson & Co..... 35%  
**Shovels—**  
Sliding Door—  
M. W. Co., list July, 1888..... 50%  
R. & E., list Dec. 18, 1885..... 55%  
Corbin's list..... 60%  
Patent Roller..... 60%  
Patent Roller, Hatfield's..... 70%  
Russell's Anti-Friction, list Dec. 18,  
1885..... 60%  
Moore's Anti-Friction..... 50%  
Sliding Shutter—  
R. & E., list Dec. 18, 1885..... 60%  
Sargent's list..... 60%  
Reading list..... 60%  
**Ship Tools—**  
L. & J. White..... 20%  
**Shoes, Horse, Mule, &c.—**  
Horse—  
Borden's, Perkins', Phoenix and Bry-  
den's Boss, at factory..... 40%  
Bryden's Frog Pressure, at factory..... 50%  
**Mule—**  
Add \$1 per keg to above prices.  
Oz, Wrought—  
Iron lots..... \$1.00  
Small lots..... \$1.00  
Drop, up to BB, 25-30 bag, \$1.41  
Drop, up to BB, 5-10 bag, .35  
Drop, BB and larger, 35-40 bag, 1.67  
Drop, BB and larger 5-10 bag, .41  
Buck and Chilled, 25-30 bag, 1.07  
Buck and Chilled, 5-10 bag, .51  
Dust Shot, 25-30 bag, 2.00  
Dust Shot, 5-10 bag, .45  
**Shovels and Spades—**  
Ames' shovels, Spades, &c., list Nov. 1,  
1885..... 20%  
NOTE.—Jobbers frequently give 50%  
discount on above.  
Griffith's Black Iron..... 50%  
Griffith's C. S. R. R. Goods..... 20%  
St. Louis Shovel Co..... 20%  
Hussey, Binns & Co..... 15%  
Hubbard & Co..... 30%  
Lehigh Mfg. Co..... 60%  
H. M. Myers Co..... 30%  
Payne Pettibone & Son..... 35%  
Remington's (Lowman's) Pat. 70%  
Rowland's, Black Iron..... 50%  
Rowland's Steel..... 60%  
**Shovels and Teags—**  
Iron Head..... 60%  
Brass Head..... 60%  
**Sieves—**  
Mann's Tin Rim..... 50%  
Buffalo Metallic, S. S. & Co..... 50%  
Shaker (Barber's) Pat. Flour Sifters.....  
Electric..... \$1.00, 50%  
A. & W. Sifters..... \$1.00, 50%  
Hunter's..... \$1.00, 50%  
Smith's Adjustable Sifters..... \$1.00, 50%

Smith's Adjustable Milk Strainer..... \$2.00  
Smith's Adjustable T. & C. Strainer..... \$1.25  
**Steeles, Wooden Rim—**  
Mesh 18, Nested, \$1.00  
Mesh 20, Nested, \$1.10  
Mesh 24, Nested, \$1.15  
**Skains, Thimble—**  
Western list..... 75%  
Columbus Wrt. Steel, special net prices  
Coldbrookdale Iron Co..... 60%  
Seneca Falls Pattern..... 60%  
Utica P. S. T. Skains..... 60%  
Utica Turned and Flitted..... 35%  
**Slates—**  
School, by case..... 50%  
**Snaps, Harness, &c.—**  
Abecher (T. & M. Mfg. Co.)..... 55%  
Fitch's (Bristol)..... 50%  
Hotchkiss..... 10%  
Andrews..... 50%  
Sargent's Patent Guarded..... 70%  
German, new list..... 40%  
Covert, New Patent..... 50%  
Covert, New R. E..... 60%  
Covered Spring..... 60%  
**Snaths, Scythe.**  
List..... 80%  
**Soldering Irons—See Irons, Solder-  
ing.**  
**Spittoons, Cuspidors, &c.**  
Standard Pipeware—  
Cuspidors, 8 1/2-inch, \$1.00, No. 5, 8;  
No. 6, 5X 9;  
Spittoons, Daisy, 8-inch, No. 1, \$4; 10  
and 11 inch, \$6.  
**Spoke Shavers—See Shaves, Spoke.**  
**Spoke Trimmers—See Trimmers,  
Spoke.**  
**Spoons and Forks—**  
Tinned Iron—  
Basting, Cen. Stamp, Co.'s list..... 70%  
Solid Table and Tea, Cen. Stamp, Co.'s  
list..... 70%  
Buffalo S. S. & Co..... 35%  
Silver-Plated—(4 mos. or 5% cash 80  
days).  
Meriden Brit. Co., Rogers..... 40%  
C. Rogers & Bros..... 40%  
Rogers & Bros..... 40%  
Reed & Barton..... 40%  
Wm. Rogers Mfg. Co..... 40%  
Simpson, Hall, Miller & Co..... 40%  
Bolton & Edwards Silver Co..... 40%  
L. Boardman & Son..... 50%  
**Miscellaneous.**  
Holmes & Edwards Silver Co.:  
No. 67 Mexican Silver..... 50%  
No. 30 Silver Metal..... 50%  
No. 24 German Silver..... 50%  
No. 50 Nickel Silver..... 50%  
No. 49 Nickel Silver..... 50%  
Wm. Rogers Mfg. Co..... 50%  
Rogers' Silver Metal..... 50%  
18% Rogers' German Silver..... 50%  
22% Rogers' Nickel Silver..... 50%  
German Silver..... 50%  
German Silver, Hall & Elton, 50% cash  
Nickel Silver..... 50%  
Britannia..... 50%  
Boardman's Nickel Silver..... 50%  
Boardman's Britannia Spoons, case  
lots..... 50%  
**Springs—**  
Door—  
Torrey's Rod, regular size..... \$1.30  
Gray's, \$1.20, 20%  
Bee Rod, \$1.20, 20%  
Warner's No. 1, \$1.20, 20%  
Gem (Coll), list April 19, 1886..... 20%  
Star (Coll), list April 19, 1886..... 20%  
Victor (Coll)..... 20%  
Champion (Coll)..... 20%  
Philadelphia, 5 in., \$5.00; 8 in., \$7.75.  
Cowell's..... No. 1, \$1.00; No. 2,  
\$1.50..... 50%  
Rubber, complete, \$1.50, 55%  
Hercules..... 50%  
Shaw Door Check and Spring..... 25%  
**Carriage, Wagon, &c.—**  
Elliptic, Concord, Platform and Ralt  
Scroll..... 60%  
Cliff's Bolster Springs..... 25%  
**Squares—**  
Steel and Iron..... 80%  
Nickel-Plated..... 80%  
Try Square and T Bevels..... 60%  
Daston's Try Square and T Bevels..... 60%  
Winterbottom's Try and Miter..... 30%  
Starrett's Micrometer Caliper Squares..... 25%  
Avery's Flush Bevel Squares..... 40%  
Avery's Bevel Protractor..... 50%  
**Squeezers.**  
Fodder—  
Blair's..... \$1.00, 50%  
Blair's "Climax"..... \$1.25, 50%  
**Lemon—**  
Porcelain Lined, No. 1..... \$1.00, 50%  
Wood, No. 2..... \$1.00, 50%  
Wood, Common..... \$1.00, 50%  
Dunlap's Improved..... \$1.00, 50%  
Sammis..... No. 1, \$5.00; No. 2, \$6.15;  
\$18 per doz..... 35%  
Jennings' Star..... \$1.00, 50%  
The Boss..... \$1.00, 50%  
Dean's..... No. 1, \$1.00; No. 2, \$1.25;  
\$1.50; Queen, \$1.50  
King..... \$1.00, 50%  
Hotchkiss Straight Flash..... \$1.00, 50%  
Silver & Co., Glass..... \$1.00, 50%  
**Standard Fiber Ware—See Ware,  
Standard Fiber.**  
**Staples.**  
Blind—  
Barbed, 1/2 in. and larger..... \$1.00, 50%  
Barbed, 1/4 in. and larger..... \$1.00, 50%

Fence Staples, Galvanized, Same price  
Fence Staples, Plain, as F.R.Wire.  
See Trd. Rep.  
**Steelyards..... 40%**  
**Stocks and Dies—**  
**Blacksmith's**  
Waterford Goods..... 40%  
Butterfield's Goods..... 40%  
Lighting Screw Flank..... 25%  
Reese's New Screw Flank..... 25%  
Reversible Hatchet..... 30%  
Gardner..... 25%  
**Stops, Bench.**  
Morrell's..... \$1.00, 50%  
Hotchkiss..... \$1.00, 50%  
Weston's, No. 1, \$1.00; No. 2, \$1.25; No. 3,  
\$1.50; No. 4, \$1.75; No. 5, \$2.00;  
McGill's..... \$1.00, 50%  
Cincinnati..... 25%  
**Stone—**  
Hindustan No. 1, 3; Axs, 3 1/2; Slips  
No. 1, 4 1/2  
Sand Stone..... \$1.00, 50%  
Washita Stone, Extra..... \$1.00, 50%  
Washita Stone, No. 1..... \$1.00, 50%  
Washita Stone, No. 2..... \$1.00, 50%  
Washita Stone, No. 3..... \$1.00, 50%  
Washita Stone, No. 4..... \$1.00, 50%  
Washita Stone, No. 5..... \$1.00, 50%  
Washita Stone, No. 6..... \$1.00, 50%  
Washita Stone, No. 7..... \$1.00, 50%  
Washita Stone, No. 8..... \$1.00, 50%  
Washita Stone, No. 9..... \$1.00, 50%  
Washita Stone, No. 10..... \$1.00, 50%  
Washita Stone, No. 11..... \$1.00, 50%  
Washita Stone, No. 12..... \$1.00, 50%  
Washita Stone, No. 13..... \$1.00, 50%  
Washita Stone, No. 14..... \$1.00, 50%  
Washita Stone, No. 15..... \$1.00, 50%  
Washita Stone, No. 16..... \$1.00, 50%  
Washita Stone, No. 17..... \$1.00, 50%  
Washita Stone, No. 18..... \$1.00, 50%  
Washita Stone, No. 19..... \$1.00, 50%  
Washita Stone, No. 20..... \$1.00, 50%  
Washita Stone, No. 21..... \$1.00, 50%  
Washita Stone, No. 22..... \$1.00, 50%  
Washita Stone, No. 23..... \$1.00, 50%  
Washita Stone, No. 24..... \$1.00, 50%  
Washita Stone, No. 25..... \$1.00, 50%  
Washita Stone, No. 26..... \$1.00, 50%  
Washita Stone, No. 27..... \$1.00, 50%  
Washita Stone, No. 28..... \$1.00, 50%  
Washita Stone, No. 29..... \$1.00, 50%  
Washita Stone, No. 30..... \$1.00, 50%  
Washita Stone, No. 31..... \$1.00, 50%  
Washita Stone, No. 32..... \$1.00, 50%  
Washita Stone, No. 33..... \$1.00, 50%  
Washita Stone, No. 34..... \$1.00, 50%  
Washita Stone, No. 35..... \$1.00, 50%  
Washita Stone, No. 36..... \$1.00, 50%  
Washita Stone, No. 37..... \$1.00, 50%  
Washita Stone, No. 38..... \$1.00, 50%  
Washita Stone, No. 39..... \$1.00, 50%  
Washita Stone, No. 40..... \$1.00, 50%  
Washita Stone, No. 41..... \$1.00, 50%  
Washita Stone, No. 42..... \$1.00, 50%  
Washita Stone, No. 43..... \$1.00, 50%  
Washita Stone, No. 44..... \$1.00, 50%  
Washita Stone, No. 45..... \$1.00, 50%  
Washita Stone, No. 46..... \$1.00, 50%  
Washita Stone, No. 47..... \$1.00, 50%  
Washita Stone, No. 48..... \$1.00, 50%  
Washita Stone, No. 49..... \$1.00, 50%  
Washita Stone, No. 50..... \$1.00, 50%  
Washita Stone, No. 51..... \$1.00, 50%  
Washita Stone, No. 52..... \$1.00, 50%  
Washita Stone, No. 53..... \$1.00, 50%  
Washita Stone, No. 54..... \$1.00, 50%  
Washita Stone, No. 55..... \$1.00, 50%  
Washita Stone, No. 56..... \$1.00, 50%  
Washita Stone, No. 57..... \$1.00, 50%  
Washita Stone, No. 58..... \$1.00, 50%  
Washita Stone, No. 59..... \$1.00, 50%  
Washita Stone, No. 60..... \$1.00, 50%  
Washita Stone, No. 61..... \$1.00, 50%  
Washita Stone, No. 62..... \$1.00, 50%  
Washita Stone, No. 63..... \$1.00, 50%  
Washita Stone, No. 64..... \$1.00, 50%  
Washita Stone, No. 65..... \$1.00, 50%  
Washita Stone, No. 66..... \$1.00, 50%  
Washita Stone, No. 67..... \$1.00, 50%  
Washita Stone, No. 68..... \$1.00, 50%  
Washita Stone, No. 69..... \$1.00, 50%  
Washita Stone, No. 70..... \$1.00, 50%  
Washita Stone, No. 71..... \$1.00, 50%  
Washita Stone, No. 72..... \$1.00, 50%  
Washita Stone, No. 73..... \$1.00, 50%  
Washita Stone, No. 74..... \$1.00, 50%  
Washita Stone, No. 75..... \$1.00, 50%  
Washita Stone, No. 76..... \$1.00, 50%  
Washita Stone, No. 77..... \$1.00, 50%  
Washita Stone, No. 78..... \$1.00, 50%  
Washita Stone, No. 79..... \$1.00, 50%  
Washita Stone, No. 80..... \$1.00, 50%  
Washita Stone, No. 81..... \$1.00, 50%  
Washita Stone, No. 82..... \$1.00, 50%  
Washita Stone, No. 83..... \$1.00, 50%  
Washita Stone, No. 84..... \$1.00, 50%  
Washita Stone, No. 85..... \$1.00, 50%  
Washita Stone, No. 86..... \$1.00, 50%  
Washita Stone, No. 87..... \$1.00, 50%  
Washita Stone, No. 88..... \$1.00, 50%  
Washita Stone, No. 89..... \$1.00, 50%  
Washita Stone, No. 90..... \$1.00, 50%  
Washita Stone, No. 91..... \$1.00, 50%  
Washita Stone, No. 92..... \$1.00, 50%  
Washita Stone, No. 93..... \$1.00, 50%  
Washita Stone, No. 94..... \$1.00, 50%  
Washita Stone, No. 95..... \$1.00, 50%  
Washita Stone, No. 96..... \$1.00, 50%  
Washita Stone, No. 97..... \$1.00, 50%  
Washita Stone, No. 98..... \$1.00, 50%  
Washita Stone, No. 99..... \$1.00, 50%  
Washita Stone, No. 100..... \$1.00, 50%  
**Steve Polish—See Polish, Steve.**  
**Stretchers, Carpet.**  
Cast Steel, Polished..... \$1.00, 50%  
Cast Iron, Steel Points..... \$1.00, 50%  
Socket..... \$1.00, 50%  
Jullard's..... \$1.00, 50%  
**Strops, Razor—**  
Genuine Emerson..... 60%  
Imitation..... 60%  
Torrey's..... 30%  
Bader's Belt and Com..... \$1.00, 50%  
Lamont Combination..... \$1.00, 50%  
Jordan's Pat. Padded, list Nov. 1, 89, 50%  
Electric..... list net  
**Stuffers or Fillers, Sausage—**  
Miles' "Challenge," \$1.00, 50%  
Perry..... \$1.00, 50%  
\$1.00, 50%  
Draw Cut No. 4, each \$30.00..... 20%  
Enterprise Mfg. Co..... 20%  
Silver's..... 40%  
**Sweepers, Carpet.**  
Bissell No. 5..... \$1.00, 50%  
Bissell No. 7 New Drop Pan..... \$1.00, 50%  
Bissell, Grand..... \$1.00, 50%  
Grand Rapids..... \$1.00, 50%  
Crown Jewel, No. 1, \$1.00; No. 2,  
\$1.00; No. 3, \$1.00; No. 4,  
\$1.00; No. 5, \$1.00; No. 6, \$1.00;  
No. 7, \$1.00; No. 8, \$1.00; No. 9,  
\$1.00; No. 10, \$1.00; No. 11, \$1.00;  
No. 12, \$1.00; No. 13, \$1.00; No. 14,  
\$1.00; No. 15, \$1.00; No. 16, \$1.00;  
No. 17, \$1.00; No. 18, \$1.00; No. 19,  
\$1.00; No. 20, \$1.00; No. 21, \$1.00;  
No. 22



Wire Brads & Nails, see Nails, Wire.  
Steel-Wire Brads, R. & E. Mfg. Co.'s  
List.....50¢10¢

#### Tapes, Measuring—

American.....40¢40¢25¢  
Spring.....40¢  
Chesterman's, Regular List.....25¢30¢

#### Thermometers—

Tin Case.....80¢80¢10¢

#### Thimble Skelins—See Skelins.

#### Ties, Bale—Steel

Standard Wire, List.....50¢10¢25¢

#### Tinners' Shears, &c.—See Shears, Tinners', &c.

#### Tinware—

Stamped, Japanned and Piced, List  
Jan. 30 1887.....70¢10¢70¢10¢25¢

#### Tire Benders, Upsetters, &c.— See Benders and Upsetters, Tire.

#### Tools.

##### Coopers'—

Bradley's.....29¢  
Barton's.....90¢20¢25¢  
L. & J. White.....20¢25¢  
Albertson Mfg. Co.....25¢  
Beatty's.....30¢  
Sandusky Tool Co.....80¢30¢25¢  
Shaves, Cincinnati Tool Co.....30¢

##### Lumber.

Ring Peavies, "Blue Line".....\$ dos 430.00  
Ring Peavies, Common.....\$ dos 418.00  
Steel Socket Peavies.....\$ dos 421.00  
Mall Iron Socket Peavies.....\$ dos 419.00  
Cant Hooks, "Blue Line".....\$ dos 416.00  
Cant Hooks, Common Finish.....\$ dos 414.00  
Cant Hooks, Mall. Socket Clasp, "Blue  
Line" Finish.....\$ dos 416.00  
Cant Hooks, Mall. Socket Clasp, Common  
Finish.....\$ dos 414.00  
Cant Hooks, Clip Clasp, "Blue Line"  
Finish.....\$ dos 414.00  
Cant Hooks, Clip Clasp, Common Finish  
.....\$ dos 412.00  
Hand Spikes.....\$ dos 6 ft., \$15.00; 8 ft.,  
\$20.00; 10 ft., \$25.00; 12 ft., \$30.00;  
14 ft., \$35.00; 16 ft., \$40.00;  
18 ft., \$45.00; 20 ft., \$50.00;  
22 ft., \$55.00; 24 ft., \$60.00;  
26 ft., \$65.00; 28 ft., \$70.00;  
30 ft., \$75.00; 32 ft., \$80.00;  
34 ft., \$85.00; 36 ft., \$90.00;  
38 ft., \$95.00; 40 ft., \$100.00;  
42 ft., \$105.00; 44 ft., \$110.00;  
46 ft., \$115.00; 48 ft., \$120.00;  
50 ft., \$125.00; 52 ft., \$130.00;  
54 ft., \$135.00; 56 ft., \$140.00;  
58 ft., \$145.00; 60 ft., \$150.00;  
62 ft., \$155.00; 64 ft., \$160.00;  
66 ft., \$165.00; 68 ft., \$170.00;  
70 ft., \$175.00; 72 ft., \$180.00;  
74 ft., \$185.00; 76 ft., \$190.00;  
78 ft., \$195.00; 80 ft., \$200.00;  
82 ft., \$205.00; 84 ft., \$210.00;  
86 ft., \$215.00; 88 ft., \$220.00;  
90 ft., \$225.00; 92 ft., \$230.00;  
94 ft., \$235.00; 96 ft., \$240.00;  
98 ft., \$245.00; 100 ft., \$250.00;  
102 ft., \$255.00; 104 ft., \$260.00;  
106 ft., \$265.00; 108 ft., \$270.00;  
110 ft., \$275.00; 112 ft., \$280.00;  
114 ft., \$285.00; 116 ft., \$290.00;  
118 ft., \$295.00; 120 ft., \$300.00;  
122 ft., \$305.00; 124 ft., \$310.00;  
126 ft., \$315.00; 128 ft., \$320.00;  
130 ft., \$325.00; 132 ft., \$330.00;  
134 ft., \$335.00; 136 ft., \$340.00;  
138 ft., \$345.00; 140 ft., \$350.00;  
142 ft., \$355.00; 144 ft., \$360.00;  
146 ft., \$365.00; 148 ft., \$370.00;  
150 ft., \$375.00; 152 ft., \$380.00;  
154 ft., \$385.00; 156 ft., \$390.00;  
158 ft., \$395.00; 160 ft., \$400.00;  
162 ft., \$405.00; 164 ft., \$410.00;  
166 ft., \$415.00; 168 ft., \$420.00;  
170 ft., \$425.00; 172 ft., \$430.00;  
174 ft., \$435.00; 176 ft., \$440.00;  
178 ft., \$445.00; 180 ft., \$450.00;  
182 ft., \$455.00; 184 ft., \$460.00;  
186 ft., \$465.00; 188 ft., \$470.00;  
190 ft., \$475.00; 192 ft., \$480.00;  
194 ft., \$485.00; 196 ft., \$490.00;  
198 ft., \$495.00; 200 ft., \$500.00;  
202 ft., \$505.00; 204 ft., \$510.00;  
206 ft., \$515.00; 208 ft., \$520.00;  
210 ft., \$525.00; 212 ft., \$530.00;  
214 ft., \$535.00; 216 ft., \$540.00;  
218 ft., \$545.00; 220 ft., \$550.00;  
222 ft., \$555.00; 224 ft., \$560.00;  
226 ft., \$565.00; 228 ft., \$570.00;  
230 ft., \$575.00; 232 ft., \$580.00;  
234 ft., \$585.00; 236 ft., \$590.00;  
238 ft., \$595.00; 240 ft., \$600.00;  
242 ft., \$605.00; 244 ft., \$610.00;  
246 ft., \$615.00; 248 ft., \$620.00;  
250 ft., \$625.00; 252 ft., \$630.00;  
254 ft., \$635.00; 256 ft., \$640.00;  
258 ft., \$645.00; 260 ft., \$650.00;  
262 ft., \$655.00; 264 ft., \$660.00;  
266 ft., \$665.00; 268 ft., \$670.00;  
270 ft., \$675.00; 272 ft., \$680.00;  
274 ft., \$685.00; 276 ft., \$690.00;  
278 ft., \$695.00; 280 ft., \$700.00;  
282 ft., \$705.00; 284 ft., \$710.00;  
286 ft., \$715.00; 288 ft., \$720.00;  
290 ft., \$725.00; 292 ft., \$730.00;  
294 ft., \$735.00; 296 ft., \$740.00;  
298 ft., \$745.00; 300 ft., \$750.00;  
302 ft., \$755.00; 304 ft., \$760.00;  
306 ft., \$765.00; 308 ft., \$770.00;  
310 ft., \$775.00; 312 ft., \$780.00;  
314 ft., \$785.00; 316 ft., \$790.00;  
318 ft., \$795.00; 320 ft., \$800.00;  
322 ft., \$805.00; 324 ft., \$810.00;  
326 ft., \$815.00; 328 ft., \$820.00;  
330 ft., \$825.00; 332 ft., \$830.00;  
334 ft., \$835.00; 336 ft., \$840.00;  
338 ft., \$845.00; 340 ft., \$850.00;  
342 ft., \$855.00; 344 ft., \$860.00;  
346 ft., \$865.00; 348 ft., \$870.00;  
350 ft., \$875.00; 352 ft., \$880.00;  
354 ft., \$885.00; 356 ft., \$890.00;  
358 ft., \$895.00; 360 ft., \$900.00;  
362 ft., \$905.00; 364 ft., \$910.00;  
366 ft., \$915.00; 368 ft., \$920.00;  
370 ft., \$925.00; 372 ft., \$930.00;  
374 ft., \$935.00; 376 ft., \$940.00;  
378 ft., \$945.00; 380 ft., \$950.00;  
382 ft., \$955.00; 384 ft., \$960.00;  
386 ft., \$965.00; 388 ft., \$970.00;  
390 ft., \$975.00; 392 ft., \$980.00;  
394 ft., \$985.00; 396 ft., \$990.00;  
398 ft., \$995.00; 400 ft., \$1000.00;  
402 ft., \$1005.00; 404 ft., \$1010.00;  
406 ft., \$1015.00; 408 ft., \$1020.00;  
410 ft., \$1025.00; 412 ft., \$1030.00;  
414 ft., \$1035.00; 416 ft., \$1040.00;  
418 ft., \$1045.00; 420 ft., \$1050.00;  
422 ft., \$1055.00; 424 ft., \$1060.00;  
426 ft., \$1065.00; 428 ft., \$1070.00;  
430 ft., \$1075.00; 432 ft., \$1080.00;  
434 ft., \$1085.00; 436 ft., \$1090.00;  
438 ft., \$1095.00; 440 ft., \$1100.00;  
442 ft., \$1105.00; 444 ft., \$1110.00;  
446 ft., \$1115.00; 448 ft., \$1120.00;  
450 ft., \$1125.00; 452 ft., \$1130.00;  
454 ft., \$1135.00; 456 ft., \$1140.00;  
458 ft., \$1145.00; 460 ft., \$1150.00;  
462 ft., \$1155.00; 464 ft., \$1160.00;  
466 ft., \$1165.00; 468 ft., \$1170.00;  
470 ft., \$1175.00; 472 ft., \$1180.00;  
474 ft., \$1185.00; 476 ft., \$1190.00;  
478 ft., \$1195.00; 480 ft., \$1200.00;  
482 ft., \$1205.00; 484 ft., \$1210.00;  
486 ft., \$1215.00; 488 ft., \$1220.00;  
490 ft., \$1225.00; 492 ft., \$1230.00;  
494 ft., \$1235.00; 496 ft., \$1240.00;  
498 ft., \$1245.00; 500 ft., \$1250.00;  
502 ft., \$1255.00; 504 ft., \$1260.00;  
506 ft., \$1265.00; 508 ft., \$1270.00;  
510 ft., \$1275.00; 512 ft., \$1280.00;  
514 ft., \$1285.00; 516 ft., \$1290.00;  
518 ft., \$1295.00; 520 ft., \$1300.00;  
522 ft., \$1305.00; 524 ft., \$1310.00;  
526 ft., \$1315.00; 528 ft., \$1320.00;  
530 ft., \$1325.00; 532 ft., \$1330.00;  
534 ft., \$1335.00; 536 ft., \$1340.00;  
538 ft., \$1345.00; 540 ft., \$1350.00;  
542 ft., \$1355.00; 544 ft., \$1360.00;  
546 ft., \$1365.00; 548 ft., \$1370.00;  
550 ft., \$1375.00; 552 ft., \$1380.00;  
554 ft., \$1385.00; 556 ft., \$1390.00;  
558 ft., \$1395.00; 560 ft., \$1400.00;  
562 ft., \$1405.00; 564 ft., \$1410.00;  
566 ft., \$1415.00; 568 ft., \$1420.00;  
570 ft., \$1425.00; 572 ft., \$1430.00;  
574 ft., \$1435.00; 576 ft., \$1440.00;  
578 ft., \$1445.00; 580 ft., \$1450.00;  
582 ft., \$1455.00; 584 ft., \$1460.00;  
586 ft., \$1465.00; 588 ft., \$1470.00;  
590 ft., \$1475.00; 592 ft., \$1480.00;  
594 ft., \$1485.00; 596 ft., \$1490.00;  
598 ft., \$1495.00; 600 ft., \$1500.00;  
602 ft., \$1505.00; 604 ft., \$1510.00;  
606 ft., \$1515.00; 608 ft., \$1520.00;  
610 ft., \$1525.00; 612 ft., \$1530.00;  
614 ft., \$1535.00; 616 ft., \$1540.00;  
618 ft., \$1545.00; 620 ft., \$1550.00;  
622 ft., \$1555.00; 624 ft., \$1560.00;  
626 ft., \$1565.00; 628 ft., \$1570.00;  
630 ft., \$1575.00; 632 ft., \$1580.00;  
634 ft., \$1585.00; 636 ft., \$1590.00;  
638 ft., \$1595.00; 640 ft., \$1600.00;  
642 ft., \$1605.00; 644 ft., \$1610.00;  
646 ft., \$1615.00; 648 ft., \$1620.00;  
650 ft., \$1625.00; 652 ft., \$1630.00;  
654 ft., \$1635.00; 656 ft., \$1640.00;  
658 ft., \$1645.00; 660 ft., \$1650.00;  
662 ft., \$1655.00; 664 ft., \$1660.00;  
666 ft., \$1665.00; 668 ft., \$1670.00;  
670 ft., \$1675.00; 672 ft., \$1680.00;  
674 ft., \$1685.00; 676 ft., \$1690.00;  
678 ft., \$1695.00; 680 ft., \$1700.00;  
682 ft., \$1705.00; 684 ft., \$1710.00;  
686 ft., \$1715.00; 688 ft., \$1720.00;  
690 ft., \$1725.00; 692 ft., \$1730.00;  
694 ft., \$1735.00; 696 ft., \$1740.00;  
698 ft., \$1745.00; 700 ft., \$1750.00;  
702 ft., \$1755.00; 704 ft., \$1760.00;  
706 ft., \$1765.00; 708 ft., \$1770.00;  
710 ft., \$1775.00; 712 ft., \$1780.00;  
714 ft., \$1785.00; 716 ft., \$1790.00;  
718 ft., \$1795.00; 720 ft., \$1800.00;  
722 ft., \$1805.00; 724 ft., \$1810.00;  
726 ft., \$1815.00; 728 ft., \$1820.00;  
730 ft., \$1825.00; 732 ft., \$1830.00;  
734 ft., \$1835.00; 736 ft., \$1840.00;  
738 ft., \$1845.00; 740 ft., \$1850.00;  
742 ft., \$1855.00; 744 ft., \$1860.00;  
746 ft., \$1865.00; 748 ft., \$1870.00;  
750 ft., \$1875.00; 752 ft., \$1880.00;  
754 ft., \$1885.00; 756 ft., \$1890.00;  
758 ft., \$1895.00; 760 ft., \$1900.00;  
762 ft., \$1905.00; 764 ft., \$1910.00;  
766 ft., \$1915.00; 768 ft., \$1920.00;  
770 ft., \$1925.00; 772 ft., \$1930.00;  
774 ft., \$1935.00; 776 ft., \$1940.00;  
778 ft., \$1945.00; 780 ft., \$1950.00;  
782 ft., \$1955.00; 784 ft., \$1960.00;  
786 ft., \$1965.00; 788 ft., \$1970.00;  
790 ft., \$1975.00; 792 ft., \$1980.00;  
794 ft., \$1985.00; 796 ft., \$1990.00;  
798 ft., \$1995.00; 800 ft., \$2000.00;  
802 ft., \$2005.00; 804 ft., \$2010.00;  
806 ft., \$2015.00; 808 ft., \$2020.00;  
810 ft., \$2025.00; 812 ft., \$2030.00;  
814 ft., \$2035.00; 816 ft., \$2040.00;  
818 ft., \$2045.00; 820 ft., \$2050.00;  
822 ft., \$2055.00; 824 ft., \$2060.00;  
826 ft., \$2065.00; 828 ft., \$2070.00;  
830 ft., \$2075.00; 832 ft., \$2080.00;  
834 ft., \$2085.00; 836 ft., \$2090.00;  
838 ft., \$2095.00; 840 ft., \$2100.00;  
842 ft., \$2105.00; 844 ft., \$2110.00;  
846 ft., \$2115.00; 848 ft., \$2120.00;  
850 ft., \$2125.00; 852 ft., \$2130.00;  
854 ft., \$2135.00; 856 ft., \$2140.00;  
858 ft., \$2145.00; 860 ft., \$2150.00;  
862 ft., \$2155.00; 864 ft., \$2160.00;  
866 ft., \$2165.00; 868 ft., \$2170.00;  
870 ft., \$2175.00; 872 ft., \$2180.00;  
874 ft., \$2185.00; 876 ft., \$2190.00;  
878 ft., \$2195.00; 880 ft., \$2200.00;  
882 ft., \$2205.00; 884 ft., \$2210.00;  
886 ft., \$2215.00; 888 ft., \$2220.00;  
890 ft., \$2225.00; 892 ft., \$2230.00;  
894 ft., \$2235.00; 896 ft., \$2240.00;  
898 ft., \$2245.00; 900 ft., \$2250.00;  
902 ft., \$2255.00; 904 ft., \$2260.00;  
906 ft., \$2265.00; 908 ft., \$2270.00;  
910 ft., \$2275.00; 912 ft., \$2280.00;  
914 ft., \$2285.00; 916 ft., \$2290.00;  
918 ft., \$2295.00; 920 ft., \$2300.00;  
922 ft., \$2305.00; 924 ft., \$2310.00;  
926 ft., \$2315.00; 928 ft., \$2320.00;  
930 ft., \$2325.00; 932 ft., \$2330.00;  
934 ft., \$2335.00; 936 ft., \$2340.00;  
938 ft., \$2345.00; 940 ft., \$2350.00;  
942 ft., \$2355.00; 944 ft., \$2360.00;  
946 ft., \$2365.00; 948 ft., \$2370.00;  
950 ft., \$2375.00; 952 ft., \$2380.00;  
954 ft., \$2385.00; 956 ft., \$2390.00;  
958 ft., \$2395.00; 960 ft., \$2400.00;  
962 ft., \$2405.00; 964 ft., \$2410.00;  
966 ft., \$2415.00; 968 ft., \$2420.00;  
970 ft., \$2425.00; 972 ft., \$2430.00;  
974 ft., \$2435.00; 976 ft., \$2440.00;  
978 ft., \$2445.00; 980 ft., \$2450.00;  
982 ft., \$2455.00; 984 ft., \$2460.00;  
986 ft., \$2465.00; 988 ft., \$2470.00;  
990 ft., \$2475.00; 992 ft., \$2480.00;  
994 ft., \$2485.00; 996 ft., \$2490.00;  
998 ft., \$2495.00; 1000 ft., \$2500.00;  
1002 ft., \$2505.00; 1004 ft., \$2510.00;  
1006 ft., \$2515.00; 1008 ft., \$2520.00;  
1010 ft., \$2525.00; 1012 ft., \$2530.00;  
1014 ft., \$2535.00; 1016 ft., \$2540.00;  
1018 ft., \$2545.00; 1020 ft., \$2550.00;  
1022 ft., \$2555.00; 1024 ft., \$2560.00;  
1026 ft., \$2565.00; 1028 ft., \$2570.00;  
1030 ft., \$2575.00; 1032 ft., \$2580.00;  
1034 ft., \$2585.00; 1036 ft., \$2590.00;  
1038 ft., \$2595.00; 1040 ft., \$2600.00;  
1042 ft., \$2605.00; 1044 ft., \$2610.00;  
1046 ft., \$2615.00; 1048 ft., \$2620.00;  
1050 ft., \$2625.00; 1052 ft., \$2630.00;  
1054 ft., \$2635.00; 1056 ft., \$2640.00;  
1058 ft., \$2645.00; 1060 ft., \$2650.00;  
1062 ft., \$2655.00; 1064 ft., \$2660.00;  
1066 ft., \$2665.00; 1068 ft., \$2670.00;  
1070 ft., \$2675.00; 1072 ft., \$2680.00;  
1074 ft., \$2685.00; 1076 ft., \$2690.00;  
1078 ft., \$2695.00; 1080 ft., \$2700.00;  
1082 ft., \$2705.00; 1084 ft., \$2710.00;  
1086 ft., \$2715.00; 1088 ft., \$2720.00;  
1090 ft., \$2725.00; 1092 ft., \$2730.00;  
1094 ft., \$2735.00; 1096 ft., \$2740.00;  
1098 ft., \$2745.00; 1100 ft., \$2750.00;  
1102 ft., \$2755.00; 1104 ft., \$2760.00;  
1106 ft., \$2765.00; 1108 ft., \$2770.00;  
1110 ft., \$2775.00; 1112 ft., \$2780.00;  
1114 ft., \$2785.00; 1116 ft., \$2790.00;  
1118 ft., \$2795.00; 1120 ft., \$2800.00;  
1122 ft., \$2805.00; 1124 ft., \$2810.00;  
1126 ft., \$2815.00; 1128 ft., \$2820.00;  
1130 ft., \$2825.00; 1132 ft., \$2830.00;  
1134 ft., \$2835.00; 1136 ft., \$2840.00;  
1138 ft., \$2845.00; 1140 ft., \$2850.00;  
1142 ft., \$2855.00; 1144 ft., \$2860.00;  
1146 ft., \$2865.00; 1148 ft., \$2870.00;  
1150 ft., \$2875.00; 1152 ft., \$2880.00;  
1154 ft., \$2885.00; 1156 ft., \$2890.00;  
1158 ft., \$2895.00; 1160 ft., \$2900.00;  
1162 ft., \$2905.00; 1164 ft., \$2910.00;  
1166 ft., \$2915.00; 1168 ft., \$2920.00;  
1170 ft., \$2925.00; 1172 ft., \$2930.00;  
1174 ft., \$2935.00; 1176 ft., \$2940.00;  
1178 ft., \$2945.00; 1180 ft., \$2950.00;  
1182 ft., \$2955.00; 1184 ft., \$2960.00;  
1186 ft., \$2965.00; 1188 ft., \$2970.00;  
1190 ft., \$2975.00; 1192 ft., \$2980.00;  
1194 ft., \$2985.00; 1196 ft., \$2990.00;  
1198 ft., \$2995.00; 1200 ft., \$3000.00;  
1202 ft., \$3005.00; 1204 ft., \$3010.00;  
1206 ft., \$3015.00; 1208 ft., \$3020.00;  
1210 ft., \$3025.00; 1212 ft., \$3030.00;  
1214 ft., \$3035.00; 1216 ft., \$3040.00;  
1218 ft., \$3045.00; 1220 ft., \$3050.00;  
1222 ft., \$3055.00; 1224 ft., \$3060.00;  
1226 ft., \$3065.00; 1228 ft., \$3070.00;  
1230 ft., \$3075.00; 1232 ft., \$3080.00;  
1234 ft., \$3085.00; 1236 ft., \$3090.00;  
1238 ft., \$3095.00; 1240 ft., \$3100.00;  
1242 ft., \$3105.00; 1244 ft., \$3110.00;  
1246 ft., \$3115.00; 1248 ft., \$3120.00;  
1250 ft., \$3125.00; 1252 ft., \$3130.00;  
1254 ft., \$3135.00; 1256 ft., \$3140.00;  
1258 ft., \$3145.00; 1260 ft., \$3150.00;  
1262 ft., \$3155.00; 1264 ft., \$3160.00;  
1266 ft., \$3165.00; 1268 ft., \$3170.00;  
1270 ft., \$3175.00; 1272 ft., \$3180.00;  
1274 ft., \$3185.00; 1276 ft., \$3190.00;  
1278 ft., \$3195.00; 1280 ft., \$3200.00;  
1282 ft., \$3205.00; 1284 ft., \$3210.00;  
1286 ft., \$3215.00; 1288 ft., \$3220.00;  
1290 ft., \$3225.00; 1292 ft., \$3230.00;  
1294 ft., \$3235.00; 1296 ft., \$3240.00;  
1298 ft., \$3245.00; 1300 ft., \$3250.00;  
1302 ft., \$3255.00; 1304 ft., \$3260.00;  
1306 ft., \$3265.00; 1308 ft., \$3270.00;  
1310 ft., \$3275.00; 1312 ft., \$3280.00;  
1314 ft., \$3285.00; 1316 ft., \$3290.00;  
1318 ft., \$3295.00; 1320 ft., \$3300.00;  
1322 ft., \$3305.00; 1324 ft., \$3310.00;  
1326 ft., \$3315.00; 1328 ft., \$3320.00;  
1330 ft., \$3325.00; 1332 ft., \$3330.00;  
1334 ft., \$3335.00; 1336 ft., \$3340.00;  
1338 ft., \$3345.00; 1340 ft., \$3350.00;  
1342 ft., \$3355.00; 1344 ft., \$3360.00;  
1346 ft., \$3365.00; 1348 ft., \$3370.00;  
1350 ft., \$3375.00; 1352 ft., \$3380.00;  
1354 ft., \$3385.00; 1356 ft., \$3390.00;  
1358 ft., \$3395.00; 1360 ft., \$3400.00;  
1362 ft., \$3405.00; 1364 ft., \$3410.00;  
1366 ft., \$3415.00; 1368 ft., \$3420.00;  
1370 ft., \$3425.00; 1372 ft., \$3430.00;  
1374 ft., \$3435.00; 1376 ft., \$3440.00;  
1378 ft., \$3445.00; 1380 ft., \$3450.00;  
1382 ft., \$3455.00; 1384 ft., \$3460.00;  
1386 ft., \$3465.00; 1388 ft., \$3470.00;  
1390 ft., \$3475.00; 1392 ft., \$3480.00;  
1394 ft., \$3485.00; 1396 ft., \$3490.00;  
1398 ft., \$3495.00; 1400 ft., \$3500.00;  
1402 ft., \$3505.00; 1404 ft., \$3510.00;  
1406 ft., \$3515.00; 1408 ft., \$3520.00;  
1410 ft., \$3525.00; 1412 ft., \$3530.00;  
1414 ft., \$3535.00; 1416 ft., \$3540.00;  
1418 ft., \$3545.00; 1420 ft., \$3550.00;  
1422 ft., \$3555.00; 1424 ft., \$3560.00;  
1426 ft., \$3565.00; 1428 ft., \$3570.00;  
1430 ft., \$3575.00; 1432 ft., \$3580.00;  
1434 ft., \$3585.00; 1436 ft., \$3590.00;  
1438 ft., \$3595.00; 1440 ft., \$3600.00;  
144

# CURRENT METAL PRICES.

JULY 8, 1891.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

## IRON AND STEEL.

### Bar Iron from Store.

Common Iron:	
3/4 to 2 in. round and square...	2.00 @ 2.10
1 to 6 in. x 3/4 to 1 in. ....	
Refined Iron:	
3/4 to 2 in. round and square...	2.10 @ 2.30
1 to 4 in. x 3/4 to 1 1/2 in. ....	
4 1/2 to 6 in. x 3/4 to 1 in. ....	
1 to 6 in. x 1 1/4 and 5-16 .....	2.30 @ 2.50
Rods—3/4 and 1-16 round and sq. ...	2.20 @ 2.40
Bands—1 to 6 x 8-16 to No. 12 .....	2.40 @ 2.60
"Burden Best" Iron, base price .....	8.00
Burden's "H. B. & S." Iron, base price .....	2.80
"Ulster" .....	3.00
Norway Bars .....	4.00
Norway Shapes .....	5.00

### Merchant Steel from Store.

Open-Hearth and Bessemer Machinery,	Per pound.
Toe Calk, Tire and Sleigh Shoe, base price in small lots .....	2 3/4
Best Cast Steel, base price in small lots .....	8
Best Cast Steel Machinery, base price in small lots .....	5

### Sheet Iron from Store.

	Common American.	R. G.	Cleaned.
10 to 16 .....	3.00 @ 3.00	3.35	
17 to 20 .....	3.15 @ 3.25	3.85	8.75
21 to 24 .....	3.25 @ 3.35	3.90	
25 and 26 .....	3.35 @ 3.60	3.60	
27 .....	3.50 @ 3.65	3.85	
28 .....	3.65 @ 4.10		
B. B.		2d qual.	
Galv'd, 14 to 20 .....	4.75 @ 4.80		
Galv'd, 21 to 24 .....	5.12 @ 5.00		
Galv'd, 25 to 26 .....	5.50 @ 5.35		
Galv'd, 27 .....	5.90 @ 5.70		
Galv'd, 28 .....	6.35 @ 6.10		
Patent Planished .....	10 1/4 @ 11	B. 90	
Russia .....	10 1/4 @ 11		
American Cold Rolled B. B. ....	5 1/2 @ 7		
Craig Polished Sheet Steel .....	8 1/2		

### English Steel from Store.

Best Cast .....	15
Extra Cast .....	16 1/2
Swaged, Cast .....	16
Best Double Shear .....	15
Blister, 1st quality .....	12
German Steel, Best .....	10
2d quality .....	9
2d quality .....	8
Sheet Cast Steel, 1st quality .....	15
2d quality .....	14
2d quality .....	12 1/2
B. Mushet's "Special" .....	48
"Titanic" .....	20

## METALS.

	Tin.	Per lb.
Banca, Pigs.....		23 1/2
Straits, Pigs.....		22 1/2
Straits in Bars.....		24 1/2

### Tin Plates.

	Charcoal Plates.—Bright.	Per box.
Melny Grade .....	IC, 10 x 14 .....	6.50
" " .....	IC, 12 x 12 .....	6.75
" " .....	IC, 14 x 20 .....	6.50
" " .....	IC, 20 x 28 .....	15.20
" " .....	IX, 10 x 14 .....	8.00
" " .....	IX, 12 x 12 .....	8.25
" " .....	IX, 14 x 20 .....	8.00
" " .....	IX, 20 x 28 .....	16.00
" " .....	DC, 12 1/2 x 17 .....	6.00
" " .....	DX, 12 1/2 x 17 .....	7.50
Oakland Grade .....	IC, 10 x 14 .....	6.50
" " .....	IC, 12 x 12 .....	6.75
" " .....	IC, 14 x 20 .....	6.40
" " .....	IX, 10 x 14 .....	7.65
" " .....	IX, 12 x 12 .....	8.00
" " .....	IX, 14 x 20 .....	7.65
Alaway Grade .....	IC, 10 x 14 .....	6.15
" " .....	IC, 12 x 12 .....	6.30
" " .....	IC, 14 x 20 .....	6.15
" " .....	IX, 10 x 14 .....	7.30
" " .....	IX, 12 x 12 .....	7.60
" " .....	IX, 14 x 20 .....	7.30
" " .....	IX, 20 x 28 .....	14.00
" " .....	DC, 12 1/2 x 17 .....	5.80
" " .....	DX, 12 1/2 x 17 .....	6.80

### Coke Plates.—Bright.

Steel Coke.—IC, 10 x 14, 14 x 20 .....	5.70
" " .....	7.85
" " .....	11.20
IX, 10 x 14, 14 x 20 .....	6.60
SV Grade.—IC, 10 x 14, 14 x 20 .....	5.70

### Charcoal Plates.—Tenne.

Dean Grade.—IC, 14 x 20 .....	5.45
" " .....	10.60
IX, 14 x 20 .....	6.20
20 x 28 .....	12.85
Abecarne Grade.—IC, 14 x 20 .....	5.25
" " .....	10.80
IX, 14 x 20 .....	6.35
20 x 28 .....	12.35

## Tin Boiler Plates.

IXX, 14 x 20 .....	112 sheets .....	13.50
IXX, 14 x 28 .....	112 sheets .....	13.75
IXX, 14 x 31 .....	112 sheets .....	15.25

## Copper.

DUTY: Pig, Bar and Ingot, 1 1/4¢; Old Copper, 1¢  
 "B. Manufactured (including all articles of which Copper is a component of chief value), 3 1/2¢ ad valorem.

### Ingot.

Lake .....	15
Anson's Grade Arizona .....	13 1/2
Ansonia Grade Casting .....	13

### Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, December 5, 1890, being quotations for all sized lots.

	Not wider than	Not longer than	Not longer than	Weights per square foot and prices per pound.
				Over 64 oz.
				32 to 64 oz.
				16 to 32 oz.
				14 to 16 oz.
				12 to 14 oz.
				10 to 12 oz.
				8 to 10 oz.
				Less than 8 oz.
30—72 .....	22	22	22	23
30—72 .....	22	22	22	23
36—96 .....	22	22	22	24
36—96 .....	22	22	22	24
48—96 .....	22	22	22	25
48—96 .....	22	22	22	25
60—96 .....	22	22	22	27
60—96 .....	22	22	22	27
84—96 .....	22	22	22	28
84—96 .....	22	22	22	28
Over 84 in. wide .....	25	27		

All Bath Tub Sheets.... 16 oz. 14 oz. 12 oz. 10 oz.  
 Per pound..... 0.27 0.29 0.31 0.35  
 Bolt Copper, 3/4 inch diameter and over, per pound..... 2 1/2  
 Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

### Copper Bottoms, Pits and Flats.

	Per pound.
14 ounce to square foot and heavier .....	28
12 ounce and up to 14 ounce to square foot .....	27
10 ounce and up to 12 ounce .....	29
Lighter than 10 ounce .....	32
Circles less than 8 inches diameter 2 cents per pound additional.	
Circles over 13 inches diameter are not classed as Copper Bottoms.	

### Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each..... 8¢  
 Tinning sheets on one side, 30 x 60 each..... 80¢  
 For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each..... 15¢  
 For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each..... 12¢  
 For tinning boiler sizes, 7 in. (sheets 14 in. x 53 in.), each..... 12¢  
 Tinning sheets on one side, other sizes, per square foot..... 2 1/4¢  
 For tinning both sides double the above prices.

### Planished Brass and Copper.

14 x 48, 14 x 60, 14 x 66, 14 x 60 in.	
14 and 16 oz. and heavier..... 35¢	By the case..... 32¢
12 oz. and lighter..... 35¢	By the case..... 34¢
24 x 48 and 30 x 60.	
14 and 16 oz. and heavier..... 35¢	12 oz..... 30¢

### Seamless Brass and Copper Tubes.

O. G.	N. G.	%	%	%	%	%	1	1 1/2
8-14	6-12	57	55	50	20	28	27	24
15	13	38	35	31	30	29	28	25
16	14	30	28	25	31	30	29	25
17	15	40	35	32	30	31	30	26
18	16	42	36	34	32	31	30	27
19	17	43	37	35	34	32	31	28
20	18-19	44	39	37	36	35	34	31
21	20	45	41	39	38	37	36	34
22	21	48	43	40	39	38	37	36
23	22	50	44	42	41	40	39	39
24	23	53	46	44	43	41	40	41
25	24	56	49	46	45	44	43	45

Copper Bronze and Gliding Tube, 3¢ per lb. additional.

### Brass Brass Tubing. (To No. 20, inclusive.

Above 5-16 inch to 3 inch, inclusive..... 35¢  
 Plain, above 3 inch..... 45¢  
 Plain, 5-16 inch..... 45¢  
 Plain, 3/4 inch..... 60¢  
 Plain, 3-16 inch..... 61¢  
 Plain, 1/2 inch..... 1.55  
 Fancy Tubing, Brass, to No. 20, inclusive..... 45¢  
 Bronze Tubing, 3¢ per lb. more than Brass.  
 Discount from list..... 25¢

## Roll and Sheet Brass.

(Brown & Sharpe Standard Gauge.)

Common High Brass:	in.	in.	in.	in.	in.	in.	in.	in.
Wider than	10	12	14	16	18	20	22	24
and including	10	12	14	16	18	20	22	24
To No. 20, inclusive.....	21	22	23	25	27	29	31	33
Nos. 21, 22, 23 and 24.....	23	24	25	26	28	30	32	34
Nos. 25 and 26.....	23 1/2	24 1/2	27	29	31	33	35	
Nos. 27 and 28.....	28	29	30	32	34	36		

Common High Brass:	in.	in.	in.	in.	in.	in.	in.	in.
Wider than	24	26	28	30	32	34	36	40
and including	24	26	28	30	32	34	36	40
To No. 20, inclusive.....	36	39	42	46	50	55	60	65
Nos. 21, 22, 23 and 24.....	37	40	43	47	51	56	61	68
Nos. 25 and 26.....	38	41	44	48	52	57	63	71
Nos. 27 and 28.....	39	42	45	49	53	58	65	76

## Brass and Copper Wire.

Old English gauge standard.	Com. high brass.	Low brass.	Gold & copper.
Per lb.	Per lb.	Per lb.	Per lb.
All Nos. to No. 16, inclusive.....	\$0.22	\$0.26	\$0.30
No. 17 and No. 18.....	.23	.27	.31
No. 19 " " 20.....	.24	.28	.32
No. 21.....	.25	.29	.33
No. 22.....	.26	.30	.34
No. 23.....	.28	.32	.36
No. 24.....	.30	.34	.38
No. 25.....	.32	.36	.40
No. 26.....	.35	.39	.43
No. 27.....	.38	.42	.46
No. 28.....	.42	.46	.51
No. 29.....	.45	.49	.54
No. 30.....	.48	.52	.58
No. 31.....	.51	.55	.61
No. 32.....	.55	.59	.65
No. 33.....	.59	.63	.69
No. 34.....	.64	.68	.74
No. 35.....	.70	.74	.80
No. 36.....	.76	.80	.86
No. 37.....	1.00	1.04	1.10
No. 38.....	1.30	1.34	1.40
No. 39.....	2.00	2.00	2.25
No. 40.....	2.60	2.60	2.75

Spring Wire, 2¢ per lb. advance.

## Copper Belt and Hose Rivets and Burrs.

No.	Per lb.	No.	Per lb.
No. 5.....	49¢	No. 11.....	56¢
No. 6.....	49¢	No. 12.....	58¢
No. 7.....	49¢	No. 13.....	60¢
No. 8.....	50¢	No. 14.....	65¢
No. 9.....	52¢	No. 15.....	70¢
No. 10.....	54¢		

## Tobin Bronze—Rods.

1/4 inch and larger..... 18¢ per lb. net

## Tobin Bronze—Piston Rods.

1 1/4 inch and smaller..... 19¢ per lb. net  
 Over 1 1/4 inch..... 21¢ per lb. net

## Spelter.

Duty: Pig, Bars and Plates, \$1.50 per 100 lb.  
 Western Spelter ..... 54¢ @ 6 || Bertha (pure) ..... | 54¢ @ 9 |

## Zinc.

Duty: Sheet, 3 1/4¢ per lb.  
 600 lb casks..... 7 1/4¢  
 Per lb..... 7 1/4¢

## Lead.

Duty: Pig, 32¢ per 100 lb. Old Lead, 2¢ per lb. Pipe and sheets, 3 1/4¢ per lb.  
 American ..... 4 1/2¢ @ 5 || Bar..... | 5 ¢ @ 5 1/4 |
Pipe, subject to trade discount.....	7
Tin-Lined Pipe, subject to trade discount.....	15
Block Tin Pipes, subject to trade discount.....	37 1/2
Sheet, subject to trade discount.....	7 1/4

## Solder.

1/4 @ 1/4 (Guaranteed)..... 14¢  
 No. 1..... 12¢  
 Extra Wiping..... 11 1/2¢ @ 13¢  
 The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

## Antimony.

Cookson..... 15 ¢  
 Hallett's..... 13 ¢

## ALUMINUM.

### Prices in Ingots.

In lots of 2000 lb and over..... \$1.50

## Old Metals.

(Prices Paid in New York.)

Heavy Copper..... 18 ¢  
 Light Copper..... 11 ¢  
 Heavy Brass..... 10 ¢  
 Light Brass..... 8 ¢  
 Lead..... 4 ¢  
 Tea Lead..... 3 1/4 ¢  
 Zinc..... 5 ¢  
 No. 1 Pewter..... 16 ¢  
 No. 2 Pewter..... 8 ¢  
 Wrought Scrap Iron..... gross ton \$19.00  
 Heavy Cast Scrap..... gross ton 12.00  
 Stove Plate Scrap..... gross ton 8.00  
 Burnt Iron..... gross ton 6.00